

collapse, Mr. Lam was admitting that his September 30, 2009 report based on his evident assumption that the Main Building had a full concrete structural frame with concrete floors and concrete columns was incorrect and instead, the building was a combination concrete interior column and interior slab frame with the perimeter of the building constructed with load bearing clay tile which is much more fragile during this particular demolition project involving removing a narrow "Link" building sandwiched between two existing buildings that are intended to remain in place.

Furthermore, as the project's structural engineer, Mr. Lam was negligent in not preparing instructional demolition plans and being present on the site every day that demolition operations were underway, to guard against careless actions of the contractor and assure that braces were installed against the wall and at the floors to protect property and personnel and guard against improper contractor procedures. Refer to Role of the Structural Engineer in Demolition by Rob Clarke, PE. <http://rwclarke.com/PubRole.html>

5.2 Lam's observations and theory of collapse

On October 18, 2010 Frank Lam & Associates, Inc. reported on their investigation of the Partial Collapse of the Main Building and included in their report diagramed information pertaining to the damage areas. Refer to Exhibits 8, 9, 10 and 11.

The Lam engineers had conducted inspections on September 22, 2010 and October 8, 2010. They reported:

- **"East Link** - The East Link structure was completely demolished with the exception of some rebar spanning between the buildings. During the demolition of the link, an approximately 12 ft by 60 ft long section of the west side of the Main Building was also damaged and collapsed. The collapsed members include the concrete beams and slab at the second floor and roof, load bearing clay tile and brick veneer walls, exterior masonry columns, and concrete masonry unit infill at the wall opening. Part of the second floor and roof slab is still hanging by the rebar and the two wing walls at the north and south of the building are still remaining but have suffered severe damages and separation. The floor and roof beams had rotated and pulled out from the masonry walls, leaving a pocket in the walls. It appears that the collapse stops at the first interior beam along Grid 15." See Exhibits 8, 9, 10 and 11.
- **"West Link** - At the west side of the main building (page 2), the West Link structure (had been) almost completely demolished except the concrete columns and tie beams attached to the Main Building. The masonry walls of the Main Building appear to be in satisfactory condition except at the two hollow masonry columns located at the stair. The masonry columns are sitting on top of concrete columns which are terminated near the floor level. Structural cracks are observed above the concrete columns."

5.3 Probable cause of collapse and sequence of events:

Pertinent comments from the Lam report are addressed below:

1. Lam: "The origin of the force that starts the failure of the north masonry column is related to (Descon's) demolition means and methods." I agree.
2. Lam: "The origin of the force that starts the failure of the north masonry column is related to the demolition means and methods...It could be excessive force from the high impact chipping hammer working on the concrete frame". I agree that the chipping hammer could have exerted a horizontal, or high impact horizontal force, by accidentally ramming the Main Building structure while moving the chipping hammer.
3. Lam: "The outward movement of the concrete column creates a lateral (or horizontal) force on the masonry column." I agree.
4. Lam: "The hollow and unreinforced masonry column is subjected to axial and lateral (horizontal) force and does not take long to buckle and collapse. With the collapse of the first masonry column, the adjacent clay tile and brick wall panel starts to fall and move outward (in this case from east to west) because there no connection between the wall and the slab." Actually, the floor slabs would have most likely been connected directly to the masonry/clay tile walls via "U" or open lintel blocks located directly beneath the second floor and roof slabs. This type of construction allows horizontal loads such as wind loads, to be transferred into the concrete floor and roof slabs and resisted throughout the building since the floor slabs serve as load transferring "diaphragms. Such diaphragm action is also resisted by the horizontal shear strength of the interior concrete columns.
5. Lam: "As a result of the failure of the columns and wall, the slab and concrete beams above are losing support and start to deflect and rotate. At the same time, the weight of slab and wall above starts to shift to the other masonry column and overloads the column and wall panel. When the beams lose the center supports, the slab starts to deflect downward under its own weight and suffers both shear and flexural failures. When the second floor beam and slab fails the load bearing wall supporting the roof structure starts to fall, causing failure in the roof slab similar to the floor slab. The structure finally reaches equilibrium when the slab collapsed and detached from the end walls and the beam pulls out from the masonry pockets." I agree to this force mechanism in general. As the construction materials collapse, the forces are not only directly downward. With the twisting and turning of the slabs, beams and columns the materials fall with a horizontal component that presses westward all the way through the west end of the building, exerting shear loads on the floor diaphragms.

6. Lam: "It is evident that the collapse of the second floor and roof slab and beams are the result of structural failure of the columns and load bearing walls." I agree.
7. Lam: "The lack of expansion joint between this concrete column and masonry column supporting the Main Building allowed the two columns to bond together." I agree, although I am not certain it applies to the ultimate outcome. This condition would have been exposed had Lam conducted proper testing prior to the time that design documents had been prepared.
8. Lam: (At the links), "the newer concrete columns were cast against the existing masonry walls and columns without expansion joints and the columns were plastered together and creating a bond between them. This condition does not allow the columns to move independently and allows force transfer between them; and as a result, Impact from the chipping hammer hitting the concrete column in the Link could have created distress in the masonry column in the Main Building." I agree. On Lam's drawing sheet S102, it can be seen that Lam's preliminary report had failed to disclose the presence of or lack of an expansion joint at grid line 15 (see Exhibits 12, 13, and 14). On Exhibit 12, Lam notes "Contractor to field verify existing condition and contact Structural Engineer" but the note is not clear and does not indicate what the Contractor should be looking for. The plans are incomplete. In professional engineering practice, the engineer would be aware of the hazards of demolishing a narrow "Link" structure between two buildings that are to remain. If the link slab is connected to either the Main Building or the East (or West) Building, forcibly removing slabs with a chipping hammer (instead of sawcutting the Link slabs away) would be a very high risk proposition. In this case, the contractor's actions collapsed the east portion of the building and resulted in damage throughout the building.

5.4 Full extent of damage

The lateral forces exerted by the combination of the impact hammer and/or falling construction debris at the east end of the building, exerted enough horizontal force to crack almost all the basement, first and second floor columns in the Main Building, as well as some columns in the East and West buildings. The only evidence of "deterioration" from water appears from photographs to pre-exist at portions of the concrete wall in the basement.

The cracking that appears in the bottoms of the concrete columns in the photographs is the result of lateral shifting of the horizontal concrete floor and roof diaphragms, instead of the result of axial loadings on the vertical axis of the column. For example, compare those photographs with the photographs shown in Exhibit 15 which shows typical cracking patterns in the middle portions of columns subjected to axial loads.

On February 8, 2011, to repair the columns, Descon submitted a Request for Information 023 stating: "Delta Structural Tech. is preparing the Basement columns from all failing concrete, cleaning exposed steel, forming and pouring new epoxy repair mortar as requested and wrapping each column with Tyfo's SEH-51 Fiberwrap composite and epoxy matrix, as the columns are being cleaned the columns are deteriorating more than what was anticipated. Delta Structural Tech. has requested to shore up the Concrete Beams please have Structural engineer review pictures included and come by the job site to provide us with a fix and repair."

Frank Lam responded on February 13, 2011: "The total axial load of the typical interior column is 180 kips service load and the shear is 12 kips. Delta structural is to provide engineering design and details for repair and fiberwrap of the columns prepared by a P.E. for the review by the Engineer of Record. Delta structural engineer shall perform site visit to confirm the condition and loading of the columns prior to engineering design. The columns shall be temporarily shored from the basement up to the floor up to the roof structure."

In my opinion, the note about shoring should have been added to the plans before the project had been bid.

6.0 Rimkus report dated January 21, 2011

On January 18, 2011, Mr. Bruce I. Morris, PE of Rimkus Consulting Group, Inc., conducted an on-site inspection of the damage that had resulted from the September 22, 2010 structural collapse of the east end of the Main Building at the PSJA ISD school. Morris wrote: "...Rimkus was retained by Chubb Insurance Company to determine the limits of intended (demolition) work to be performed by the contractor and to determine the extent of damage to the building outside of those limits as a result of work being performed by the contractor.

The limits of intended demolition work involved the east "link" separating the east end of the Main Building from the East classroom building. Mr. Morris arbitrarily established the portion of the building west of those "link" limits to comprise the second floor and roof area between the east end of the Main Building to column line 1 -- portions of the Main Building that had actually collapsed.

Mr. Morris arbitrarily excluded the vast portion of most of the remaining portion of the damaged Main Building for no proper scientific engineering reason. Subsequently, damage was discovered in areas outside of the limits established by Morris. For example, the basement columns were found to be so weakened by the thrusting action of the forces generated throughout the building as a result of the collapse that ultimately the columns had to be reinforced. In addition, damage was discovered at the brick roof parapet. See Exhibit 16 and Exhibit 17. The parapet had to be repaired. Damage to these areas were open and obvious to Mr. Morris had he conducted a proper assessment of the limits of damage.

In my opinion, Mr. Morris' actions were misleading and negligent, causing the PSJA ISD to expend money on change orders that it otherwise would not have had to pay.

Mr. Morris addressed the west end of the building stating (page 5): "Inspection of the west end of the main building indicated the concrete columns at the sides of the west exit ended near the level of the first floor, with masonry columns extending above that level. We observed cracking in the masonry columns on both sides of the exit above the first-floor level. Concrete columns had been installed at the exterior of the main building for the walkway... (and) there was evidence of movement of the brick veneer on the first floor at the northern portion of the west wall of the main building." See Exhibit 18.

On March 8, 2011, Mr. Morris provided a supplemental letter on behalf of Rimkus and Chubb, responding to whether the work contained within a cost Estimate was within the scope of damage determined to be a result of the partial collapse of the building. Actually the entire area between the east and west end of the building was damaged to varying extent and not just to the narrow area with the arbitrary limits established by Mr. Morris in the January 18, 2011 report.

7.0 Groundwater Issues

The basement of the Main Building had evidently previously flooded at one time (see Exhibit 19) and moisture intrusion inside the basement has continued to be a problem.

Had Lam read the Raba Kistner geotechnical reports correctly, Lam could have taken the necessary precautions when designing the elevator pit, and could have notified ERO of the potential impact of moisture into the basement concrete slab.

7.1 Raba Kistner Geotechnical report dated May 8, 2009

On May 8, 2009, ERO contacted the District to request that a geotechnical engineer conduct 25 feet deep soil borings on the campus site stating: "Please have the Geotechnical Engineer confirm and coordinate the number and locations with us." Ultimately, none of the borings requested were made near the pre-existing main building. Frank Lam had not yet been retained by ERO as a consultant to help advise as to where the borings were to be located; however ERO has a professional engineer on staff so it can be assumed that the ERO engineer set the boring locations.

On August 4, 2009, Raba Kistner Consultants, Inc. released its geotechnical report on Project No. AMA09-057-01 pertaining to "Subsurface Reconnaissance Study; Future Building Additions; PSJA ISD Early College High School Campus...." stating "The purpose of this study was to perform a subsurface reconnaissance study within the subject site, to perform laboratory testing on selected samples to classify and characterize subsurface conditions, and to prepare an

engineering report presenting subsurface conditions and preliminary construction considerations."

Groundwater was encountered in some of the borings during the drilling operations. The shallowest water level was at boring B-7 where the approximate depth of groundwater encountered during the drilling operations was 13.5 feet. "At the end of the field activities, the boreholes were noticed to have caved-in to the depths described in the logs of borings ... It is possible for groundwater to exist beneath the site at shallower depths on a transient basis following periods of precipitation.

The "Preliminary Foundation Considerations" portion of the report notes that the site has relatively flat topography and special surface drainage features may be required to handle large quantities of surface water run-off associated with the topography at this site."

7.2 Raba Kistner Geotechnical report dated January 20, 2010

ERO and Frank Lam & Associates, Inc. had reached their agreement on or about September 8, 2009.

On January 20, 2010, Raba Kistner Consultants, Inc. released another report stating: "The purpose of this document is to provide supplemental recommendations to our subsurface reconnaissance study ... dated August 4, 2009...pertaining (to) deep foundations systems for the proposed main building additions at the above-referenced project site."

Continuing: "On the basis of the foundation plans provided to our office ...on December 10, 2009 by Mr. Zach Lindauer, with Frank Lam and Associates, Inc. the project's structural engineering firm, we have been asked to provide recommendations for a deep foundation system for the south, east, and west additions to the main building; situated adjacent to the east and west wing buildings, and the library building at the existing school campus."

Raba Kistner wrote: "Drainage Considerations: ... considerations of surface and subsurface drainage may be crucial to construction and adequate foundation performance of the soil-supported main building additions. Filling excavations in relatively impervious clay soils with relatively pervious select fill material creates a "bathtub" beneath the proposed main building addition structures, which can result in ponding or trapped water within the fill unless good surface and subsurface drainage is provided."

Under "Temporary Casing", the report (page 9) states: "Groundwater was observed in the borings at the time of our original subsurface exploration activities at depths ranging from about 13-1/2 ft to 23 ft below the ground surface elevations existing at the time of our study. The groundwater depths across the site are likely to vary based upon climatic conditions.

With the prior history of water observed by others inside the building, Lam would have known that the ground water would rise depending on the climate conditions. Lam failed to exercise proper diligence in taking measures that would warn ERO, at a minimum, that there was a potential for flooding inside the elevator pit as well as in the basement that already had a floor elevation approximately five to six feet below grade.

8.0 Damages Matrix

Refer to the Table 1 Damages Matrix attached as Exhibit 20.

9.0 Conclusions

1. It is my professional opinion that Mr. Frank Lam, P.E. and Frank Lam & Associates, Inc. is responsible for at least the following act, error, or omission that exists on the Project:

- a) Failing to undertake a more thorough investigation and determination of the structural integrity of an existing building for future modification and existing conditions of the facilities. On September 8, 2009, Jesus V. Delgado of ERO sent a "Letter Agreement for Structural Engineering" on the Project. The agreement contained onerous terms requiring Mr. Lam to perform initial engineering services involving conducting a structural evaluation and report for a fee of \$10,940.00 which was less than half the \$27,200.00 amount budgeted by ERO and much less than the \$40,000.00 fee recommended by Terragon, another engineering firm. Nevertheless, Mr. Lam accepted the commission instead of walking away.
- b) The September 30, 2009 report prepared by Mr. Lam was based on cursory observations. The engineering report was to have included an "evaluation of the existing structure and discussion of the issues related to renovations of the existing buildings, and provide recommendations for the structural system of the proposed building additions." However, the report stated "The condition of the structure, the framing system, and the structural evaluation of the existing buildings are based on site observations of the exposed structural members and our past experience on similar buildings." Lam evidently did not do any exploratory testing, such as having an assistant present to chip or drill into suspected concrete or tile column locations to determine what materials had been used or to determine if the exterior walls were load bearing clay tile, vintage for the era the building was built, or full concrete structural frame with concrete floors and concrete columns as he ultimately evidently assumed.
- c) The Lam report stated: "Based on our site observation, the buildings were constructed of concrete slab, beams and columns as primary structural members. The exterior of the buildings were constructed with masonry and stone.... In general, we believe that the existing structures are in good condition for the ninety year old buildings and the

proposed building additions should not affect the structural integrity of the buildings."

- d) On September 22, 2010 a structural collapse occurred at the east end of the Main Building at the Project site. The contractor had been demolishing a narrow "link" building attached to the Main Building and adjacent to another building located further east. On October 18, 2010 another Lam-generated report stated: "The concrete slab and beams at the second floor and the roof are partially supported by masonry columns at the building corners and at the entrance corridor and partially supported by exterior load bearing masonry wall which is constructed of brick veneer and clay tiles." From his observations made after the collapse, Mr. Lam was admitting that his September 30, 2009 report based on his evident assumption that the Main Building had a full concrete structural frame with concrete floors and concrete columns was incorrect and instead, the building was a combination concrete interior column and interior slab frame with the perimeter of the building constructed with load bearing clay tile which is much more fragile during this particular demolition project involving removing a narrow building sandwiched between two existing buildings that are intended to remain in place.
- e) Furthermore, as the project's structural engineer, Mr. Lam was negligent in not preparing instructional demolition plans and being present on the site every day that demolition operations were underway, to guard against careless actions of the contractor and assure that braces were installed against the wall and at the floors to protect property and personnel and guard against improper contractor procedures.

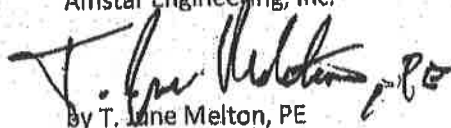
2. Based on my education, experience, and a review of the relevant Documents, it is my professional opinion that Mr. Bruce L. Morris, P.E. and Rimkus Consulting Group, Inc. are responsible for at least the following act, error, or omission that exists on the Project:

- a) On January 18, 2011, Mr. Bruce L. Morris, PE of Rimkus Consulting Group, Inc., conducted an on-site inspection of the damage that had resulted from the September 22, 2010 structural collapse of the east end of the Main Building at the PSJA ISD school. Morris wrote: "...Rimkus was retained by Chubb Insurance Company to determine the limits of intended (demolition) work to be performed by the contractor and to determine the extent of damage to the building outside of those limits as a result of work being performed by the contractor.
- b) The limits of intended demolition work involved the east "link" separating the east end of the Main Building from the East classroom building. Mr. Morris arbitrarily established the portion of the building west of those "link" limits to comprise the second floor and roof area between the east end of the Main Building to column line 1 -- portions of the Main Building that had actually collapsed.
- c) Mr. Morris arbitrarily excluded the vast portion of most of the remaining portion of the

damaged Main Building for no proper scientific engineering reason. Subsequently, damage was discovered in areas outside of the limits established by Morris. For example, the basement columns were found to be so weakened by the thrusting action of the forces generated throughout the building as a result of the collapse, that ultimately the columns had to be reinforced. In addition, damage was discovered at the brick roof parapet and the parapet had to be repaired. Damage to these areas would have been open and obvious to Mr. Morris had he conducted a proper assessment of the limits of damage.

- d) In my opinion, Mr. Morris' actions were misleading and negligent, causing the PSJA ISD to expend money on change orders that Chubb otherwise would have been required to pay.
- e) Mr. Morris addressed the west end of the building stating (page 5): "Inspection of the west end of the main building indicated the concrete columns at the sides of the west exit ended near the level of the first floor, with masonry columns extending above that level. We observed cracking in the masonry columns on both sides of the exit above the first-floor level. Concrete columns had been installed at the exterior of the main building for the walkway... (and) there was evidence of movement of the brick veneer on the first floor at the northern portion of the west wall of the main building."
- f) A photograph provided by project engineer Frank Lam clearly shows that the joints of the building frame at what is believed to be west end intersection of the referenced masonry column at both the first and second floor concrete slab had partially failed as a result of the lateral force exerted, from east to west, horizontally through the second floor slab system as a result of the collapse of the link attached to the east end of the building, against the east end of the Main Building. Thus the entire area between the east and west end of the Main Building was actually damaged to varying extent by the collapse and not just to the limited area with the arbitrary limits established by Mr. Morris in his January 18, 2011 report.
- g) On March 8, 2011, Mr. Morris provided a supplemental letter on behalf of Rimkus and Chubb, responding to whether the work contained within a cost Estimate was within the scope of damage determined to be a result of the limits established by Rimkus. The Estimate was based on a faulty limit of damage determination provided by Mr. Morris.

Respectfully submitted,
Amstar Engineering, Inc.


by T. June Melton, PE



APPENDIX "A" - DEFINITIONS AND DECLARATIONS - APPLIES TO PRELIMINARY REPORTS

- The term "inspection" refers to our performance of a reasonable but LIMITED visual observation based on our experience in observation of similar projects, and based on our opinion, discloses any observed signs of deficiencies or irregularities at the time of inspection to the extent that such deficiencies or irregularities were noted by us and are visible to us without destructive testing in order to discover hidden or latent defects. Amstar Engineering, Inc. as "Consultant" does not execute any documents that would imply or result in its certifying, guaranteeing or warranting the existence of conditions whose existence the Consultant has not or cannot ascertain. WE DO NOT ASSUME RESPONSIBILITY FOR UNSEEN EXISTING DEFICIENCIES OR IRREGULARITIES UNKNOWN TO US.
- When conducting a "visual inspection", we check for signs of damage to structures and irregularities in drainage patterns; we review plans, surveys and/or maps that are available. A "visual inspection" implies that NO ENGINEERING OR SCIENTIFIC TESTS ARE PERFORMED. If we provide engineering calculations with our report, those calculations are considered "scientific" in that they are preliminary and based on the information at hand.
- A "visual inspection" does not include geotechnical testing and evaluation; land surveys; determination if elements of a structure or drainage pattern comply with governmental code, rule or regulation or specific industry code or standard, unless specifically noted in the report. Such activities are available from a wide variety of specialized engineering services commonly available if you require them.
- A "visual inspection" is limited in scope and reflects a "snapshot" view of conditions observed at a SINGLE POINT IN TIME. With the passage of time, CHANGING CONDITIONS AFFECT STRUCTURES AND DRAINAGE PATTERNS AND OUR ABILITY TO RECOGNIZE DEFECTS. For example, inconsistent maintenance and certain repairs conceal defects temporarily, and changing ground or surface water conditions affect subterranean and surface feature. POSSIBLE CONCEALED CONDITIONS OR DEFICIENCIES MAY EXIST AND WITH SOIL EROSION OR DESICCATION, DETERIORATION OR FAILURE OF THE ENGINEERED SYSTEM IS POSSIBLE.
- The term "report" refers to our written opinions based on our visual inspection. Our opinions reflected by the report are limited to only those items specifically addressed in the report and observed by us at the time of inspection(s), and subsequent, more extensive investigations may result in observations and opinions which may affect or change the findings. BECAUSE OF ITS LIMITATIONS, A REPORT BASED ON A VISUAL INSPECTION IS A REFUTABLE DOCUMENT, PROVING YOU ONLY WITH "KNOWLEDGE" OF OUR OPINION OF THE CONDITIONS WHICH EXISTED AT THE TIME OF OUR INSPECTION, AND IS NOT TO BE RELIED ON BY ANYONE AS ANY BASIS FOR A SUBSEQUENT BUSINESS DECISION.
- The term "repair" is used in the general sense in that any action proposed in this report to limit a defective condition is not to be constructed as a complete engineering design which would otherwise normally include complete plans, specifications and ongoing site inspections. PREPARATION OF COMPLETE ENGINEERING DOCUMENTS ARE BEYOND THE SCOPE OF THIS REPORT AND ADDITIONAL ENGINEERING ADVICE MAY BE REQUIRED. DO NOT RELY ON THIS REPORT AS A GUARANTEE, EITHER EXPRESSED OR IMPLIED, THAT ALL DEFICIENCIES HAVE BEEN ADDRESSED EVEN THOUGH YOU CORRECT THE DEFICIENCIES AND OTHER MATTERS AS DISCUSSED IN THIS REPORT. No assurance of validity of our recommendations or adequacy of repair based on our recommendations can be made unless we are requested by you to provide a full inspection service while the repair is being made.
- The term "cost", if used in this report, is an approximate engineering estimate and is NOT TO BE RELIED ON AS ACCURATE. Obtain bids from contractors. Generic terms for construction materials are used as GENERAL terms to describe similar products and are not intended to fully describe the actual material encountered during the inspection. Descriptive terms such as "minor" or "moderate" are SUBJECTIVE and are based strictly on our opinion of the nature of the item observed.
- You are the "Client." Documents produced by Consultant remain the property of the Consultant and may not be used by the Client for any other endeavor without the written consent of the Consultant.
- Consultant agrees, to the fullest extent permitted by law, to indemnify and hold harmless the Client, its officers, directors and employees (collectively, Client) against all damages, liabilities or costs, including reasonable attorneys' fees and defense costs, to the extent caused by the Consultant's negligent performance of professional services per our agreement, and that of its sub-consultants or anyone for whom the Consultant is legally liable. The Client agrees, to the fullest extent permitted by law, to indemnify and hold harmless the Consultant, its officers, directors, employees and sub-consultants (collectively, Consultant) against all damages, liabilities or costs, including reasonable attorneys' fees and defense costs, to the extent caused by the Client's negligent acts in connection with the Project and the acts of its contractors, subcontractors or consultants or anyone for whom the Client is legally liable. Neither the Client nor the Consultant shall be obligated to indemnify the other party in any manner whatsoever for the other party's own negligence.
- For E&O insurance certificate, contact USI Southwest, 7600-B N. Capital of Texas Hwy., #200, Austin, TX 78731; 512-651-4163.
- LIMITATION OF LIABILITY: IN RECOGNITION OF THE RELATIVE RISKS AND BENEFITS OF THE PROJECT TO BOTH THE CLIENT AND THE CONSULTANT, THE RISKS HAVE BEEN ALLOCATED SUCH THAT THE CLIENT AGREES BY NEGOTIATION, TO THE FULLEST EXTENT PERMITTED BY LAW, TO LIMIT THE LIABILITY OF CLAIMS CONSULTANT TO THE CLIENT FOR ANY AND ALL CLAIMS, LOSSES, COSTS, DAMAGES OF ANY NATURE WHATSOEVER INCLUDING BUT NOT LIMITED TO CLAIMS FOR DELAY, OR CLAIMS EXPENSES FROM ANY CAUSE OR CAUSES, INCLUDING ATTORNEYS' FEES AND COSTS AND EXPERT-WITNESS FEES AND COSTS, SO THAT THE TOTAL AGGREGATE LIABILITY OF THE CONSULTANT TO THE CLIENT SHALL NOT EXCEED \$50,000 (FIFTY THOUSAND DOLLARS). IT IS INTENDED THAT THIS LIMITATION APPLY TO ANY AND ALL LIABILITY OR CAUSE OF ACTION BETWEEN CLIENT AND CONSULTANT HOWEVER ALLEGED OR ARISING, UNLESS OTHERWISE PROHIBITED BY LAW.

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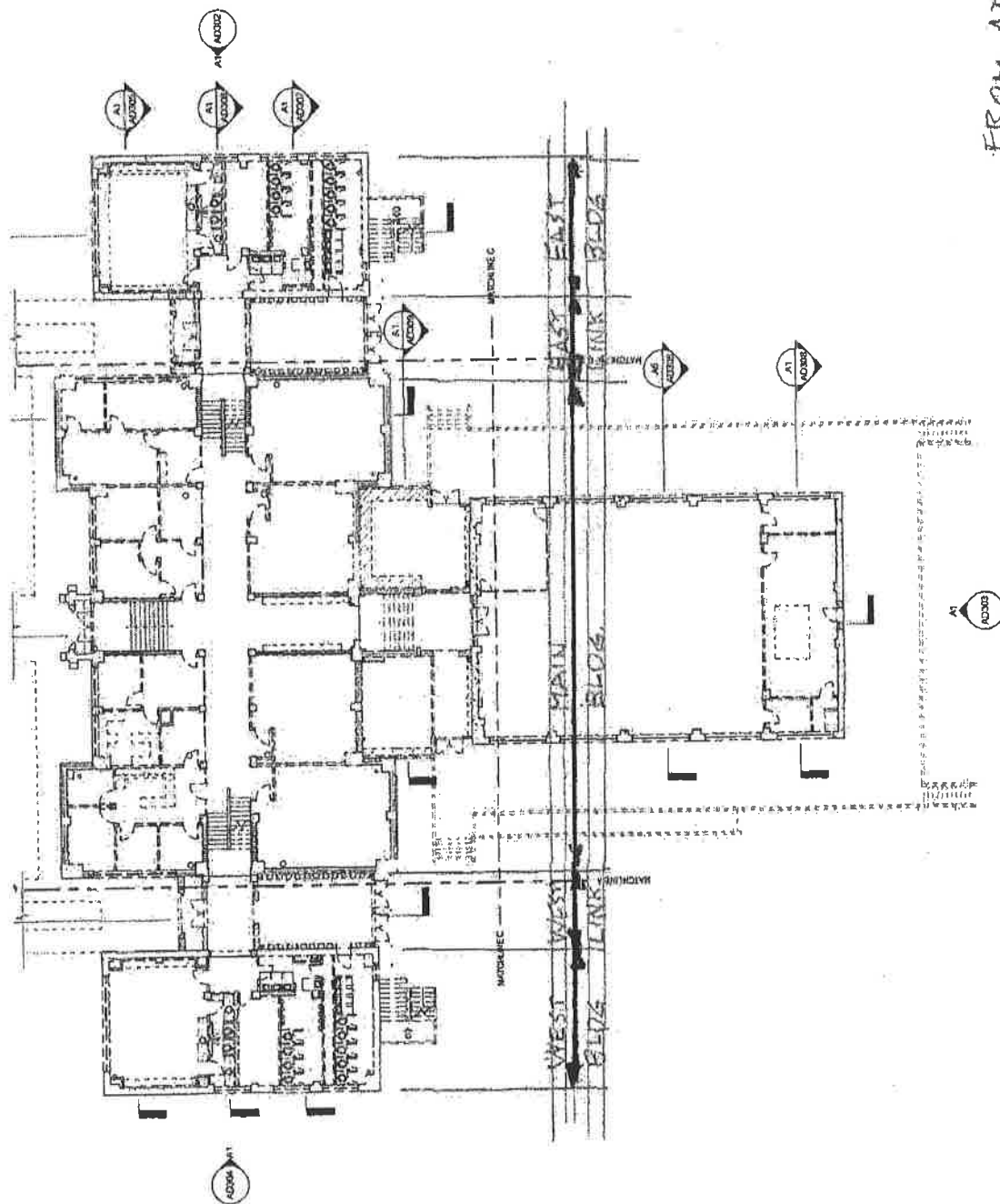
TABLE 1
DAMAGES MATRIX

A. Costs directly related to building collapse

Date	Reference	Description	Cost
10/27/2010	CP 015	Fix, repair and strengthening of columns at basement	50,886.00
12/22/2010	CP 020	Fix, repair & strengthening of 12 columns at basement	69,787.00
4/22/2011	CP 025	Add additional strength via FRP to the original 12 concrete previously scheduled and 33 additional columns found to be in bad conditions by the structural engineer. Adjust \$186,523 cost to \$158,301 per CCD7 5/3/11 CP 025	158,310.00
1/17/11	CO 001	Remove and build east and west side walls	522,726.00
	CP026	Repair stair nosings in east and west side and front lobby.	26,115.00
	CP023	Fix parapet walls	57,000.00
	CP 031-R	CP 031-R furrouts, parapets, steps and ramp, parapet due to change in roof slope	15,066.00
11/7/2011	CP 031	Various reconstructive construction items	56,770.00
		Sub-total	956,660.00

B. Costs directly related to basement slab moisture

Date	Reference	Description	Cost
8/2/12	CP 004	On August 7, 2013, Raba Kistner tested concrete slab moisture & readings were 2.6 to 3.91 lbs of water over 1000 sf in 24 hrs. 8/ 2/ 2012 Slab moisture remediation and topping system and removal of cork.	15,650.00
		Sub - total	15,650.00
		GRAND TOTAL	972,310.00



FROM AD203

DISCLAIMER:
 CONTRACTOR MUST COORDINATE SELECTIVE DEMOLITION WITH ALL FRAMES AND WITH ALL
 CIVIL, MECHANICAL, ELECTRICAL, AND ARCHITECTURAL DRAWINGS. IT IS NOT POSSIBLE TO SHOW
 REQUIRED DEMOLITION REMOVAL AND/OR CHANGING IN EVERY DETAIL.
 CONTRACTOR MUST COORDINATE WITH ASBESTOS CONSULTANT & CONTRACTOR THE EXT
 OF ASBESTOS REMOVAL.

A1 COMPOSITE FIRST FLOOR DEMOLITION PLAN
 1/16\"/>

EXHIBIT 1

From AD 305

41 DEMOLITION BUILDING SECTION
3/52" = 1'-0"

EXHIBIT 2

PSJA ISD T-STEM EARLY COLLEGE HIGH SCHOOL
(Old Memorial Middle School) - PHASE I
RENOVATIONS AND ADDITIONS
Pharr - San Juan - Alamo Independent School District

ERO Architects
Project No. 09007
PSJA ISD C&P #09-10-006

SECTION 02 4100

DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Selective demolition of built site elements.
- B. Selective demolition of building elements for alterations purposes.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 1000 - Summary: Description of items to be salvaged or removed for re-use by Owner.
- C. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- D. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.
- E. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products.
- F. Section 01 7419 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.
- G. Section 31 1000 - Site Clearing: Vegetation and existing debris removal.
- H. Section 31 2200 - Grading: Topsoil removal.
- I. Section 31 2200 - Grading: Fill material for filling holes, pits, and excavations generated as a result of removal operations.
- J. Section 31 2323 - Fill: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.03 REFERENCE STANDARDS

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2004.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Site Plan: Showing:
 - 1. Vegetation to be protected.
 - 2. Areas for temporary construction and field offices.
- C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
 - 1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
 - 2. Identify demolition firm and submit qualifications.
 - 3. Include a summary of safety procedures.

EXHIBIT 3

PSJA ISD T-STEM EARLY COLLEGE HIGH SCHOOL
(Old Memorial Middle School) - PHASE I
RENOVATIONS AND ADDITIONS
Pharr - San Juan - Alamo Independent School District

ERQ Architects
Project No. 09067
PSJA ISD CSP #09-10-006

- D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.05 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: Company specializing in the type of work required.
 - 1. Minimum of 5 years of documented experience.

1.06 PROJECT CONDITIONS

- A. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Fill Material: As specified in Section 31 2200 - Grading

PART 3 EXECUTION

3.01 SCOPE

- A. Remove paving and curbs as required to accomplish new work.
- B. Remove all paving and curbs within construction limits indicated on drawings.
- C. Within area of new construction, remove foundation walls and footings to a minimum of 2 feet below finished grade.
- D. Remove concrete slabs on grade within construction limits indicated on drawings.
- E. Remove other items indicated, for salvage, relocation, and recycling.
- F. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required so that required rough grade elevations do not subside within one year after completion.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with other requirements specified in Section 01 7000.
- B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. Comply with applicable requirements of NFPA 241.
 - 3. Use of explosives is not permitted.
 - 4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 - 5. Provide, erect, and maintain temporary barriers and security devices.
 - 6. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
 - 7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - 8. Do not close or obstruct roadways or sidewalks without permit.
 - 9. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
 - 10. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

**PSJA ISD T-STEM EARLY COLLEGE HIGH SCHOOL
(Old Memorial Middle School) - PHASE I
RENOVATIONS AND ADDITIONS
Pharr - San Juan - Alamo Independent School District**

ERO Architects
Project No. 09007
PSJA ISD CSP #09-10-006

- C. Do not begin removal until receipt of notification to proceed from PSJA Independent School District.
- D. Do not begin removal until vegetation to be relocated has been removed and specified measures have been taken to protect vegetation to remain.
- E. Protect existing structures and other elements that are not to be removed.
 - 1. Provide bracing and shoring.
 - 2. Prevent movement or settlement of adjacent structures.
 - 3. Stop work immediately if adjacent structures appear to be in danger.
- F. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- G. If hazardous materials are discovered during removal operations, stop work and notify ERO Architects and PSJA Independent School District; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
- H. Perform demolition in a manner that maximizes salvage and recycling of materials.
 - 1. Comply with requirements of Section 01 7419 - Waste Management.
- I. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

3.03 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to PSJA Independent School District.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to PSJA Independent School District.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as shown.
 - 2. Report discrepancies to ERO Architects before disturbing existing installation.
 - 3. Beginning of demolition work constitutes acceptance of existing conditions.
- B. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
 - 2. Remove items indicated on drawings.
- C. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.

PSJA ISD T-STEM EARLY COLLEGE HIGH SCHOOL
(Old Memorial Middle School) - PHASE I
RENOVATIONS AND ADDITIONS
Pharr - San Juan - Alamo Independent School District

ERO Architects
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PSJA ISD CSP #09-10-006

2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 3. See Section 01 1000 for other limitations on outages and required notifications.
 4. Verify that abandoned services serve only abandoned facilities before removal.
 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.
- D. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
 4. Patch as specified for patching new work.

3.05 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Remove from site all materials not to be reused on site; comply with requirements of Section 01 7419 - Waste Management.
- C. Leave site in clean condition, ready for subsequent work.
- D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

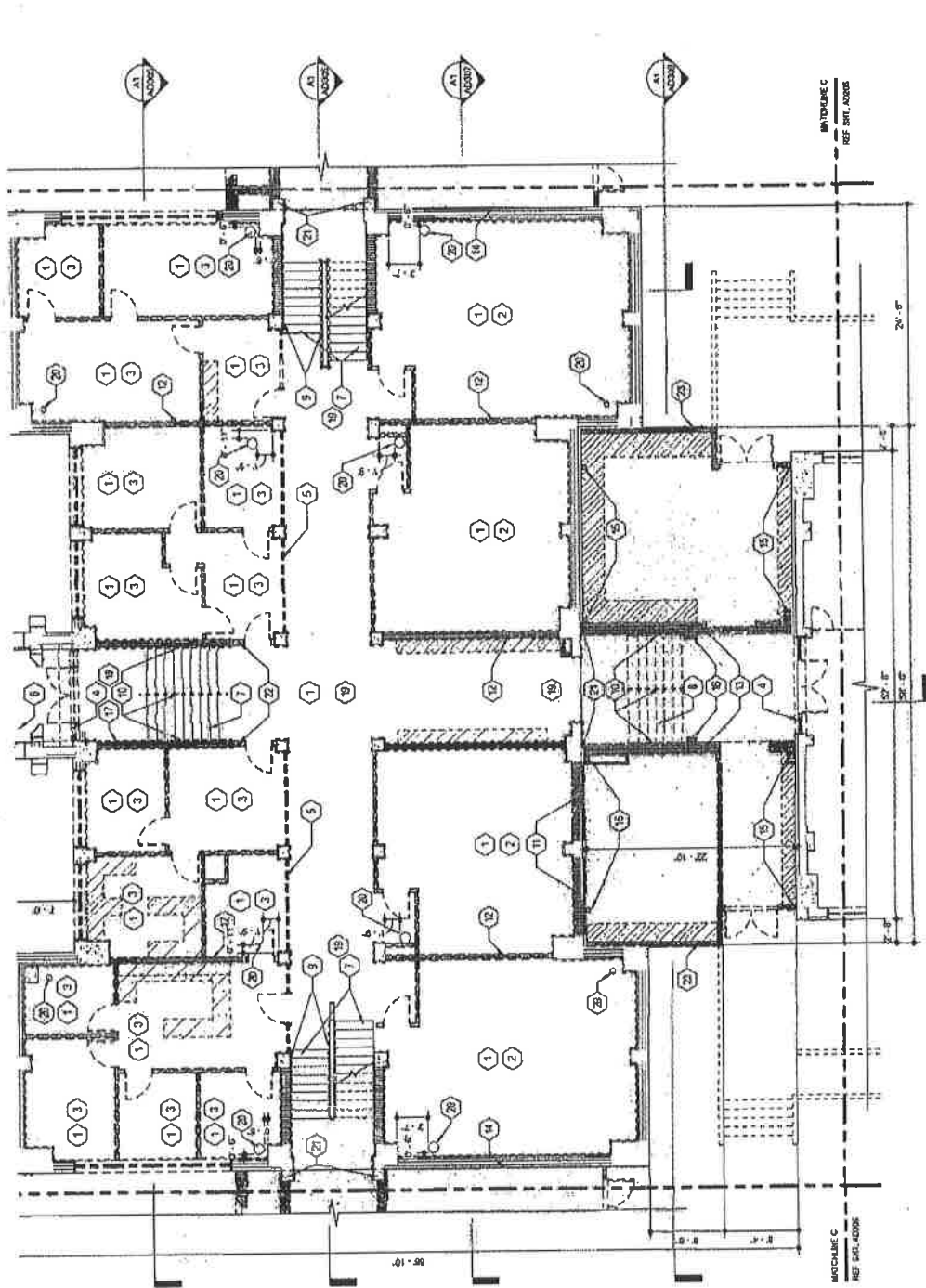
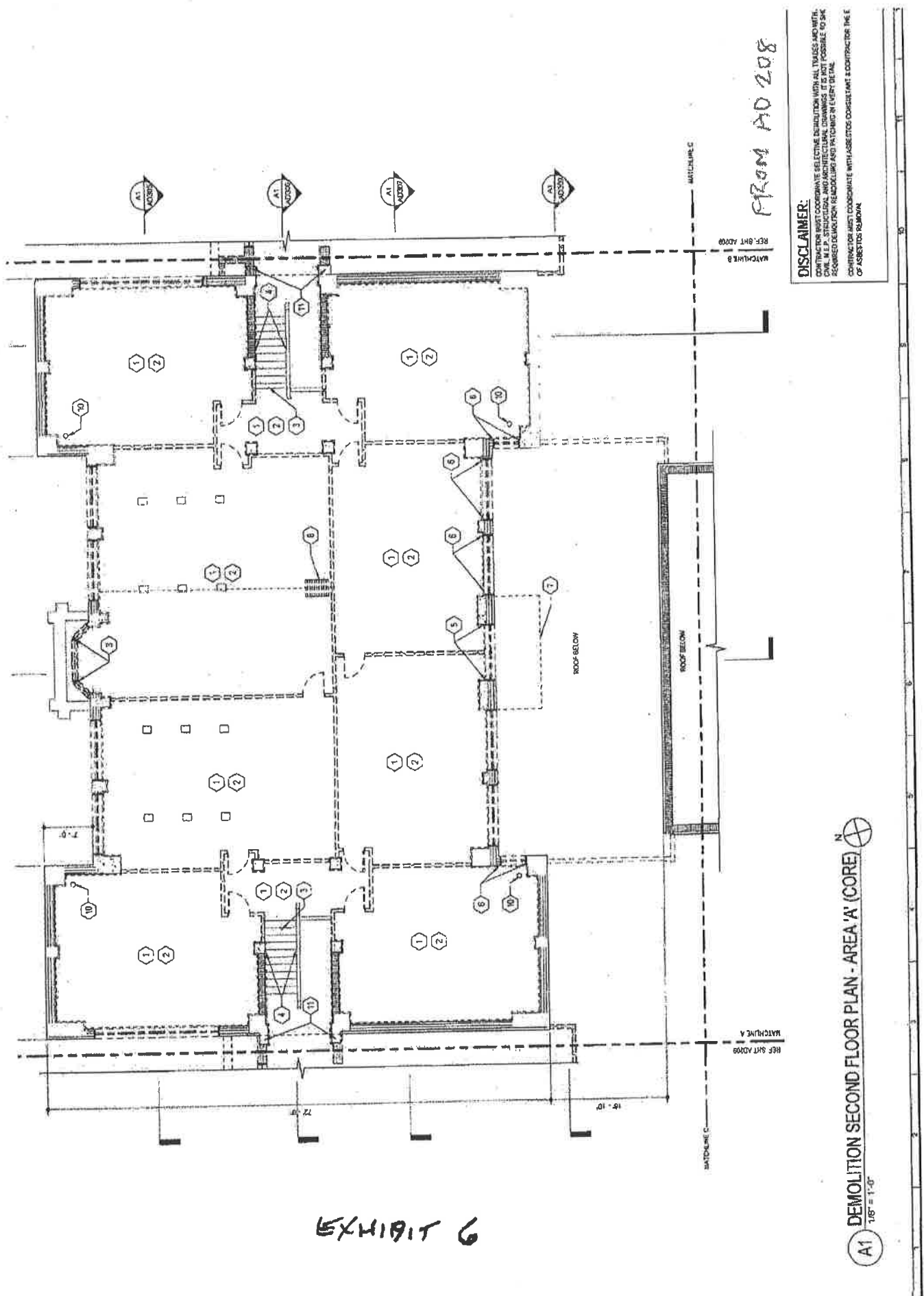


EXHIBIT 5

FROM AD 104

DISCLAIMER:
CONTRACTOR MUST COORDINATE SELECTIVE DEMOLITION WITH
CITY, ALL P. STRUCTURAL AND ARCHITECTURAL DRAWINGS. IT
RECOMMENDED FOR THE CONTRACTOR TO OBTAIN A PERMIT
CONTRACTOR MUST COORDINATE WITH ASSOCIATE CONSULTANT
OF JARROLD EDITION.

A1
DEMOLITION FIRST FLOOR PLAN - AREA 'A' (CORE)
1/8" = 1'-0"



ARCHITECTURAL GRAPHIC STANDARDS

*for Architects, Engineers, Decorators,
Builders, Draftsmen and Students*

HARLES GEORGE RAMSEY, A.I.A.
the Late HAROLD REEVE SLEEPER, F.A.I.A.

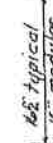
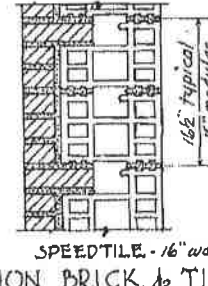
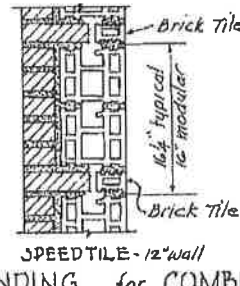
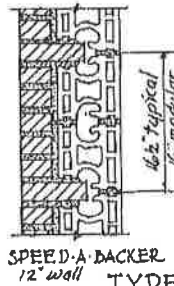
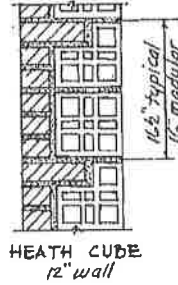
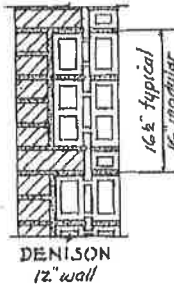
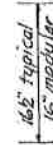
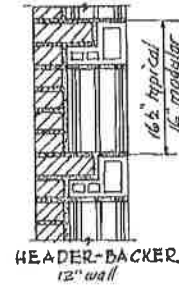
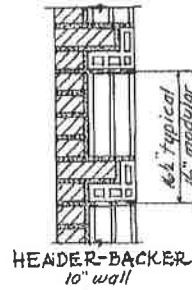
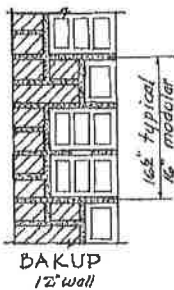


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LONDON

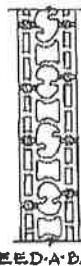
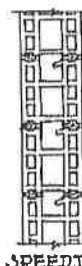
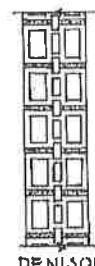
EXHIBIT 7

STRUCTURAL CLAY TILE



TYPES OF BONDING for COMBINATION BRICK & TILE WALL

Other combinations of units may be used for any desired header interval.

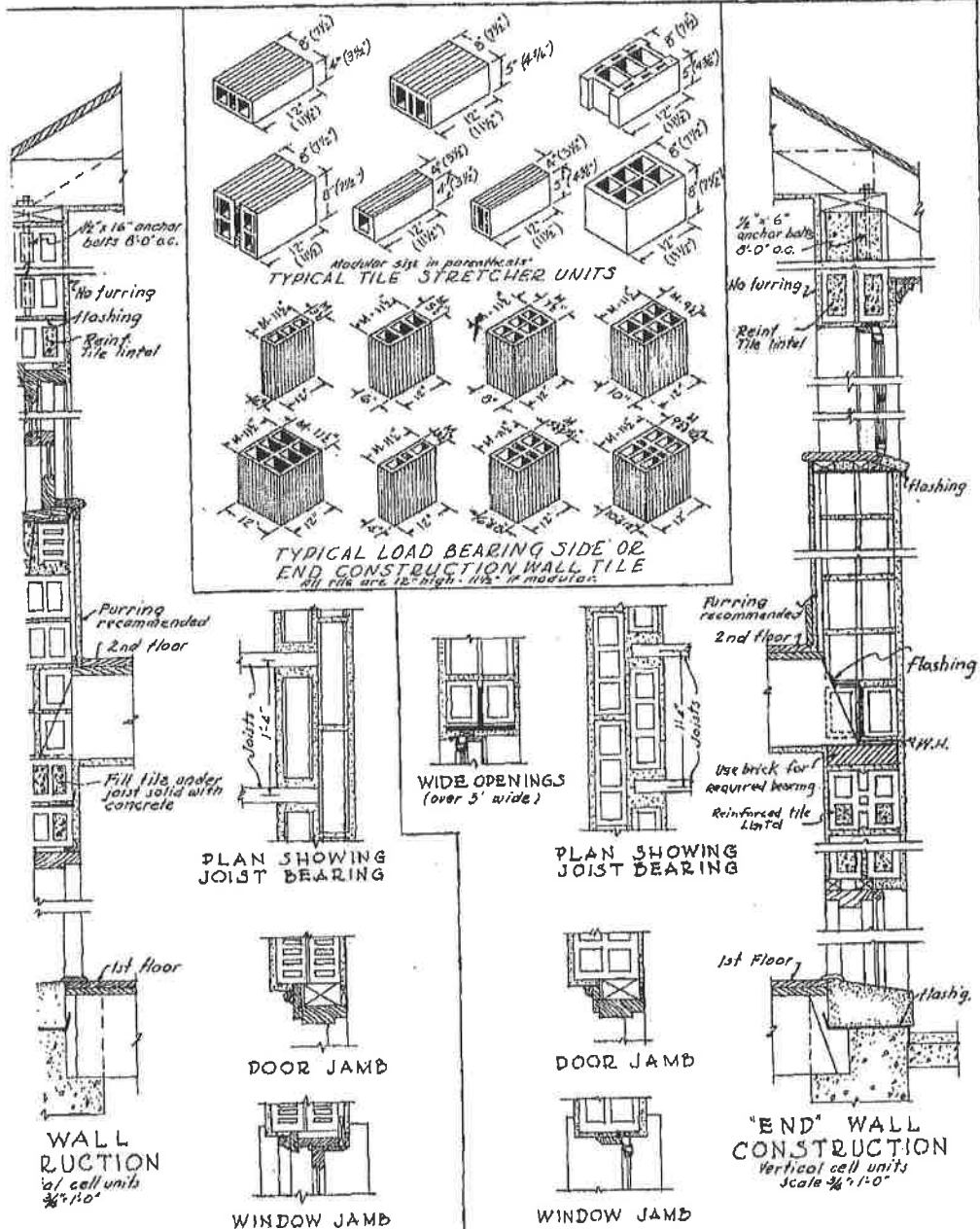


TYPES OF NON-CONTINUOUS JOINT, SINGLE UNIT STRUCTURAL CLAY TILE

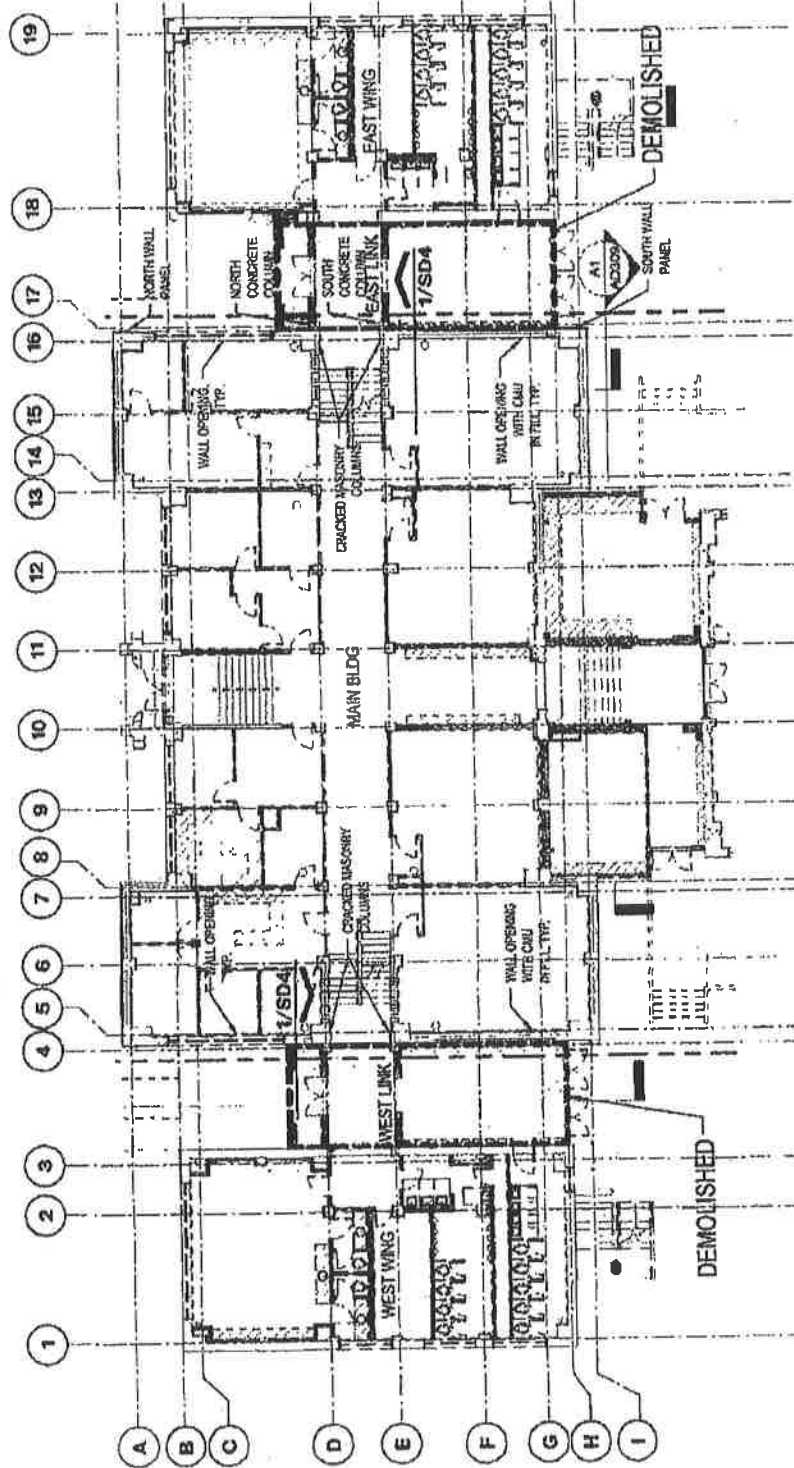
Scale 3/4" = 1'-0"

Scoring not indicated on sections. Tile is made by most manufacturers to make combination walls 10'. Mortar for both brick and back-up tile to be 1 part Portland Cement, 1 part lime, and 3 to 4 parts sharp sand. Mortar beds to be 3/4" thick, parging recommended back of brick or for face of brick. Recommendations of the Structural Clay Products Institute - 1955

STRUCTURAL CLAY TILE



ATTACHMENT B- DRAWINGS

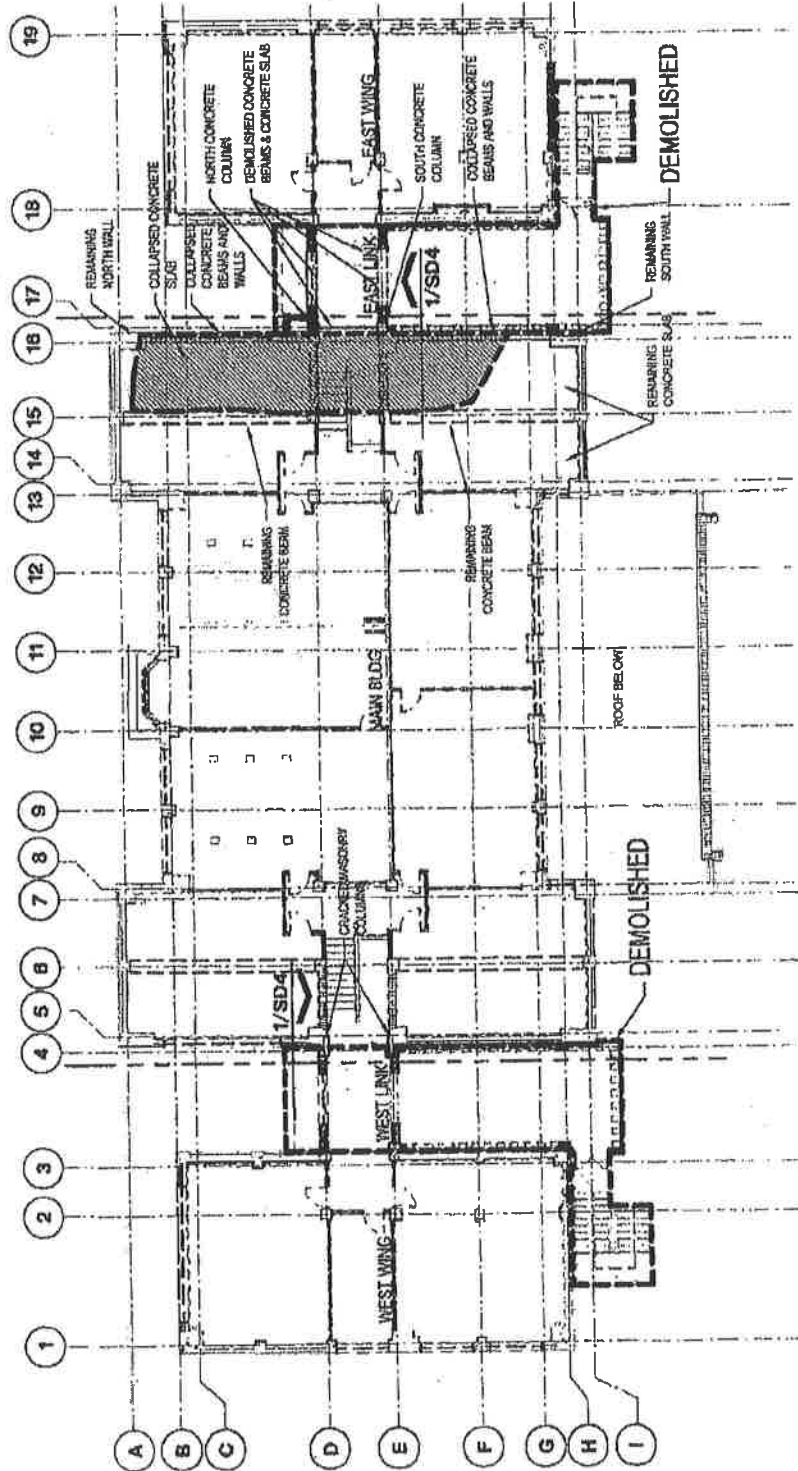


1 FIRST FLOOR PARTIAL
DEMOLITION PLAN
SCALE 1/8" = 1'-0"

SD1

EXHIBIT 8

ATTACHMENT B- DRAWINGS

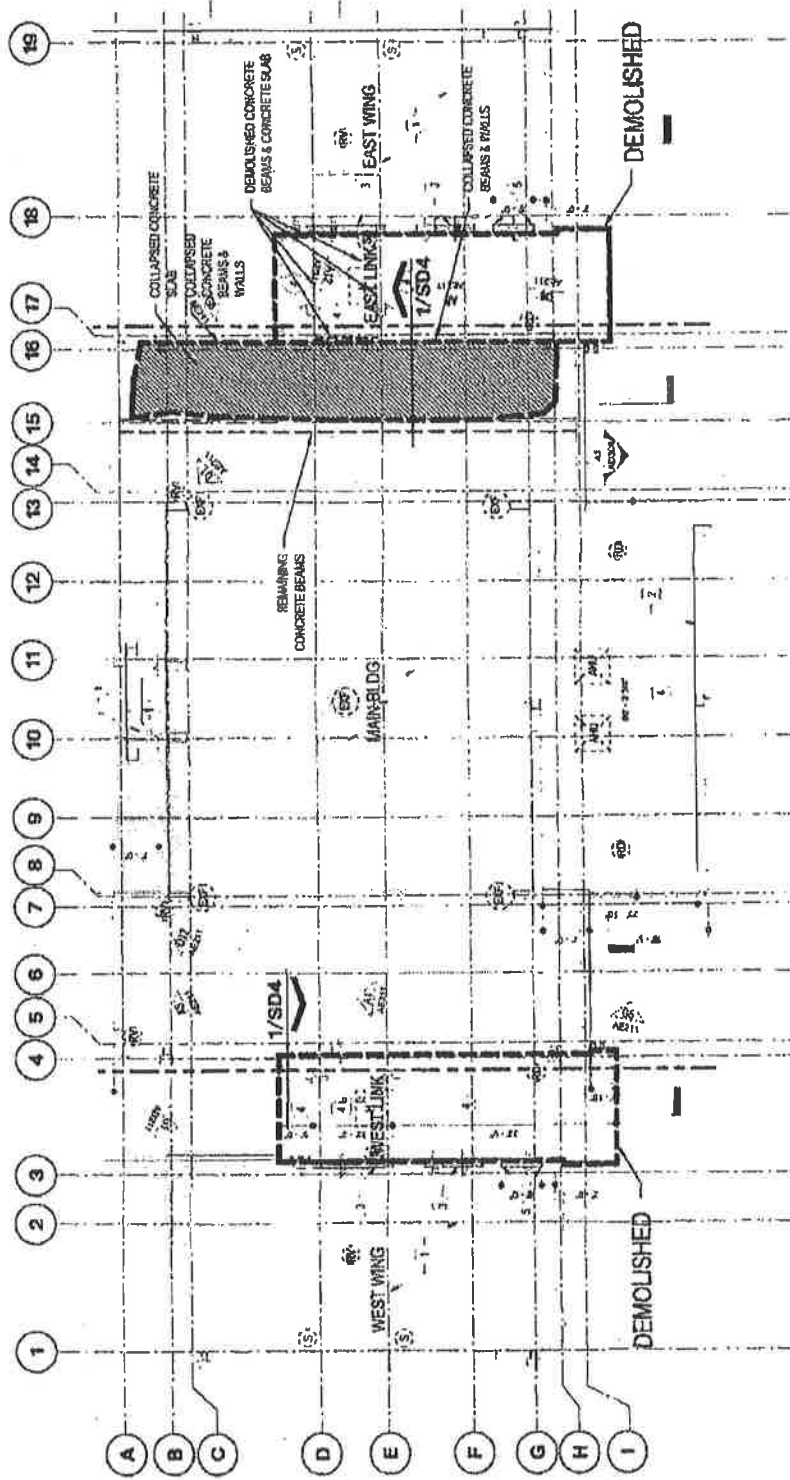


1 SECOND FLOOR PARTIAL
DEMOLITION PLAN
SCALE 1/8" = 1'-0"

SD2

EXHIBIT 9

ATTACHMENT B- DRAWINGS

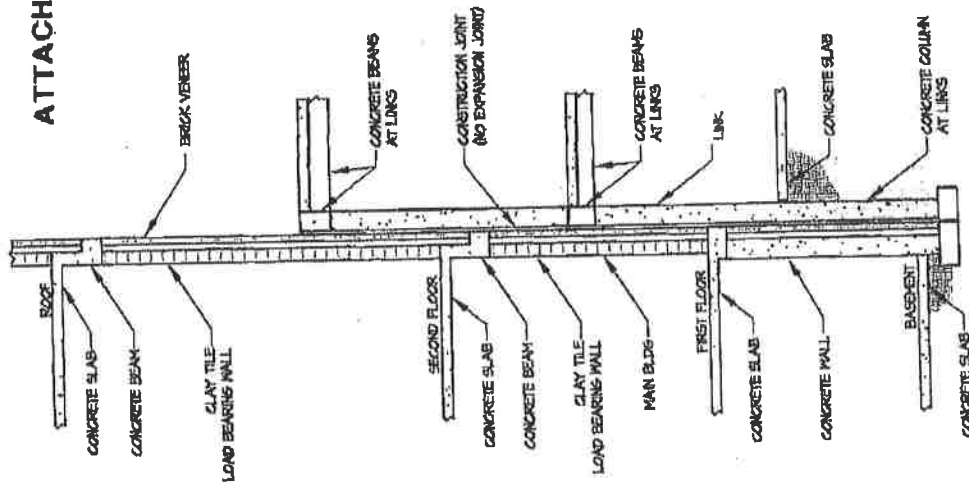


1 ROOF PARTIAL
DEMOLITION PLAN
SCALE 1/8" = 1'-0"

SD3

EXHIBIT 10

ATTACHMENT B- DRAWINGS



1 WALL SECTION @ MAIN BLDG &
LINKS-ORIGINAL CONDITION

SCALE: 3/8" = 1'-0"

SD4

EXHIBIT 11



300 South 8th Street,
McAllen, Texas 78501
956.661.0400

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Registration No. F-2545
Expiration Date 12-31-2008
FLA PROJECT NUMBER: 0924

COLLEGE HIGH SCHOOL (OLD MEMORIAL
ASE) RENOVATIONS AND ADDITIONS

114 E. U.S. HIGHWAY 83
PHARR, TX 78577
RR SAN JUAN ALAMO ISD

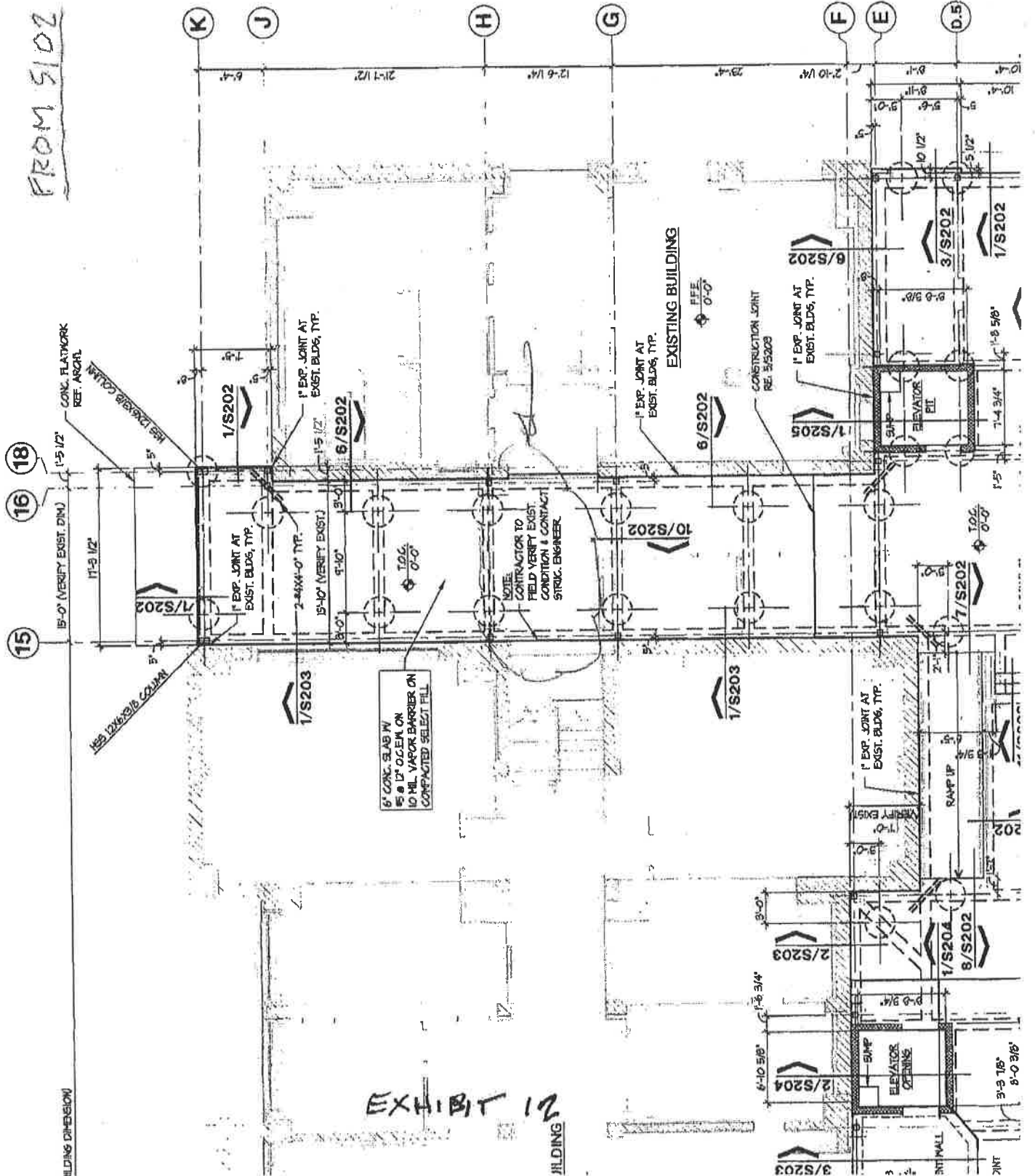
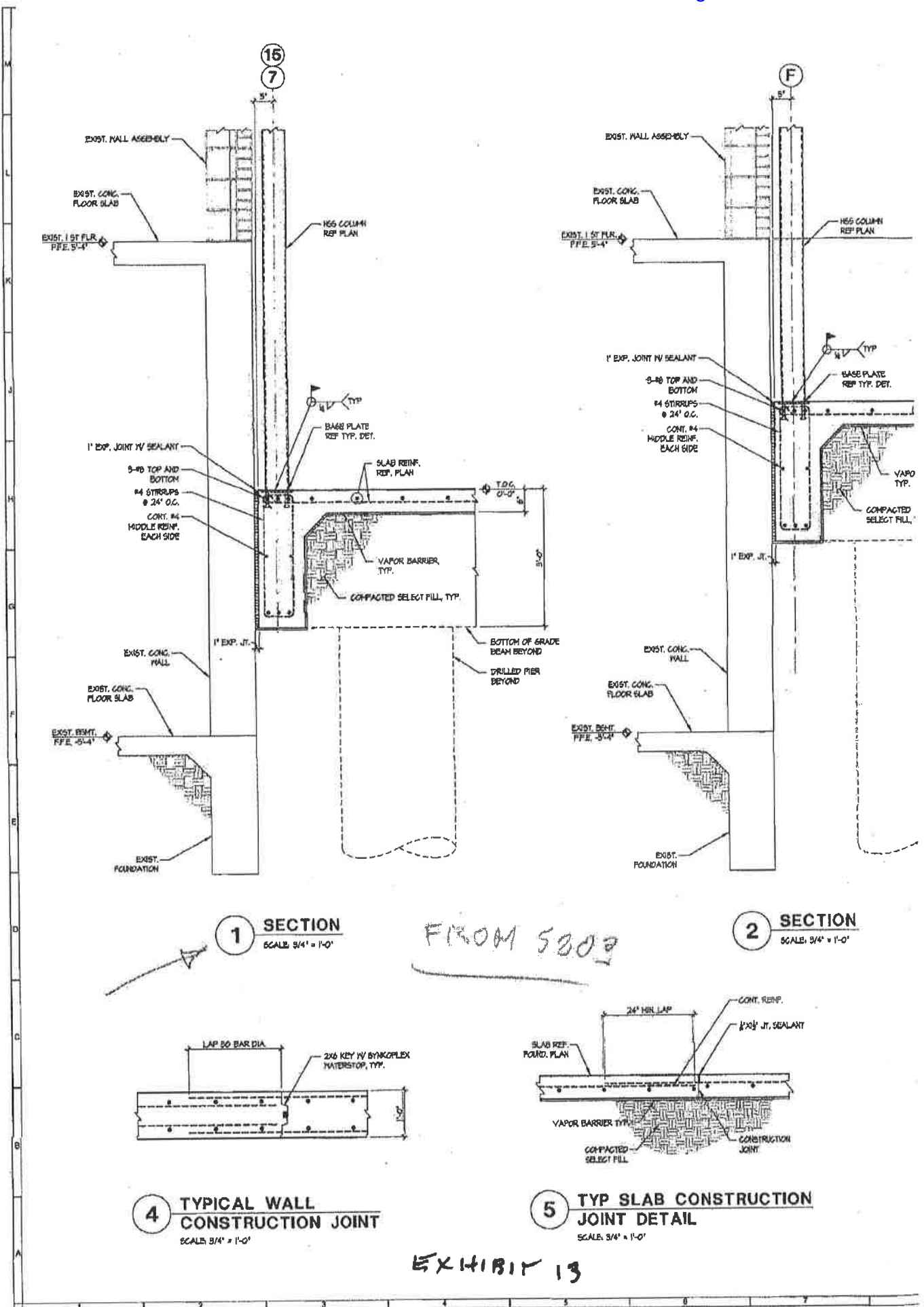
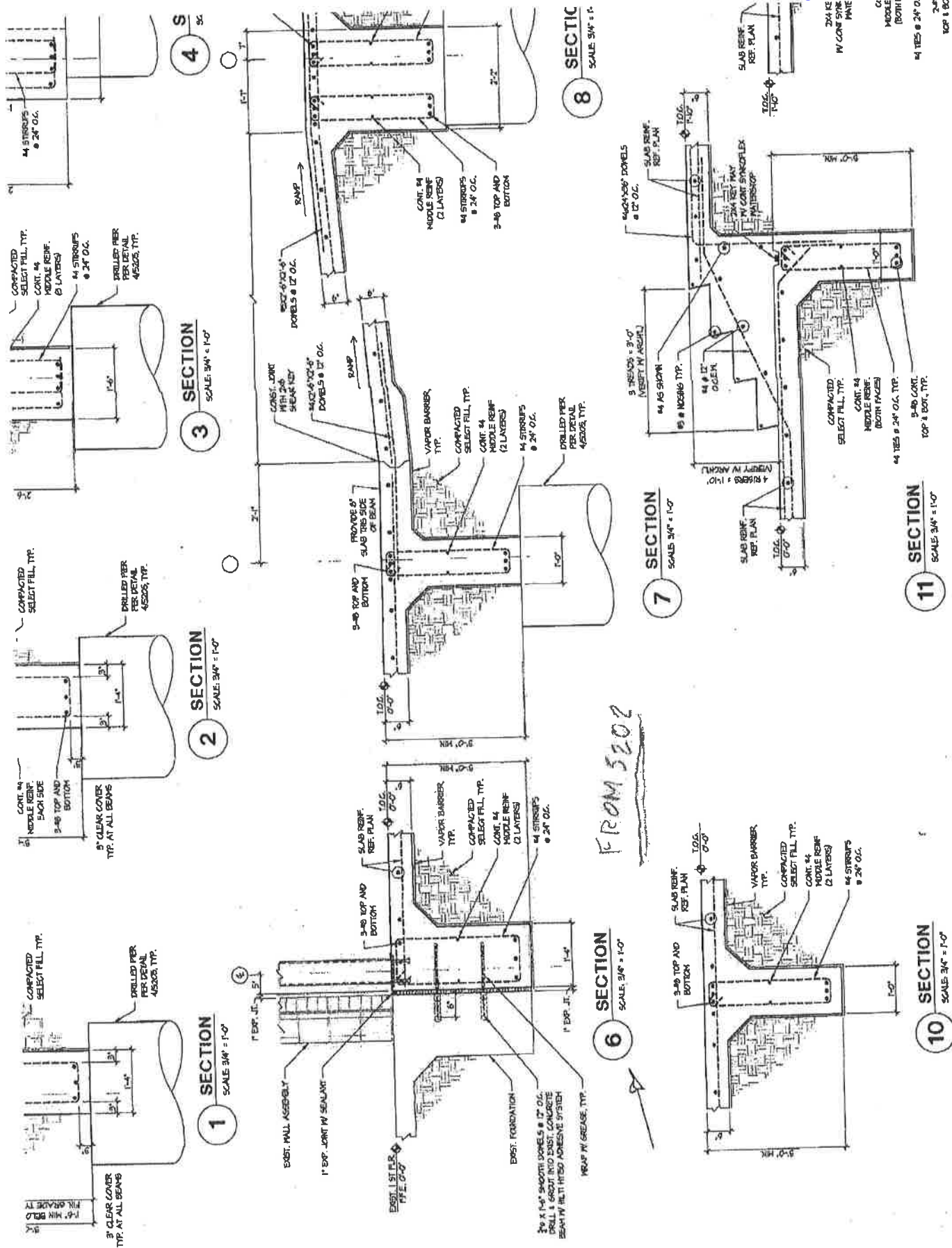


EXHIBIT 12

BUILDING DIMENSION

BUILDING





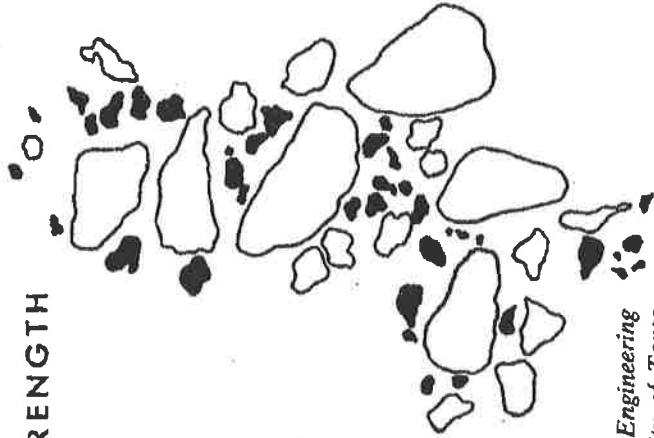
Reinforced Concrete Fundamentals

WITH EMPHASIS

ON ULTIMATE STRENGTH

PHIL M. FERGUSON

*Professor of Civil Engineering
The University of Texas*



New York • John Wiley & Sons, Inc.
London

EXHIBIT 15

Preface

A text should be forward-looking, leading the student toward improved methods rather than simply recording present practice. Forward-looking methods now include (1) emphasis upon the results of research and physical testing, and (2) the use of ultimate strength design methods; and in prospect, probably limit design and the yield-line method for slabs. Ultimate strength design represents an entirely new philosophy which utilizes proven strengths established from earlier research.

This text emphasizes both the physical behavior of reinforced concrete members and the approved ultimate strength theory. It is desirable that reinforced concrete, as an inelastic material, be taught differently from a simple junior course in strength of materials. Whenever appropriate, topics are introduced with descriptions of member

FIFTH PRINTING, JULY, 1962

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Library of Congress Catalog Card Number: 58-13459

Printed in the United States of America

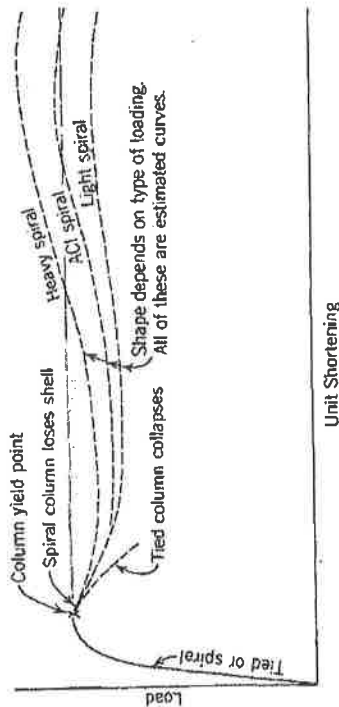


Fig. 2.2 - Comparison of strains in tied and spiral columns.

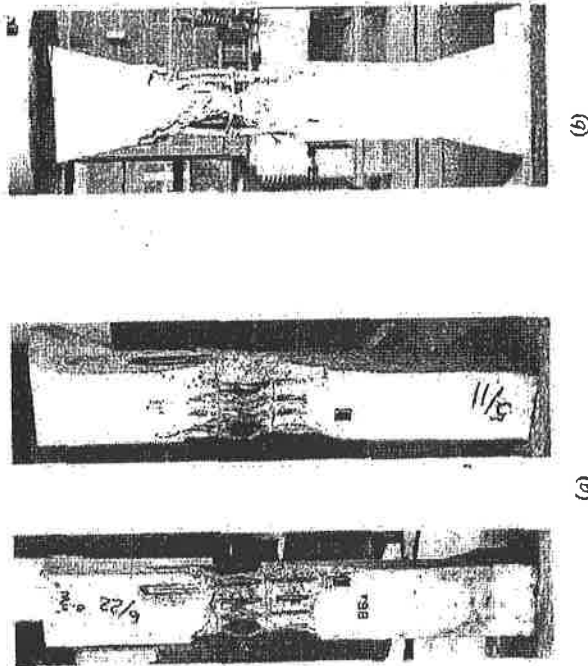


Fig. 2.3. Failure of tied columns. (a) Note the bars buckled between ties. $h/l = 7.5$. Special ends were cast to permit comparative tests with eccentric loads. (From Ref. 3, Univ. of Ill.) (b) Column in which a tie seems to have failed after yield point of column was reached. (Courtesy Portland Cement Assn.)

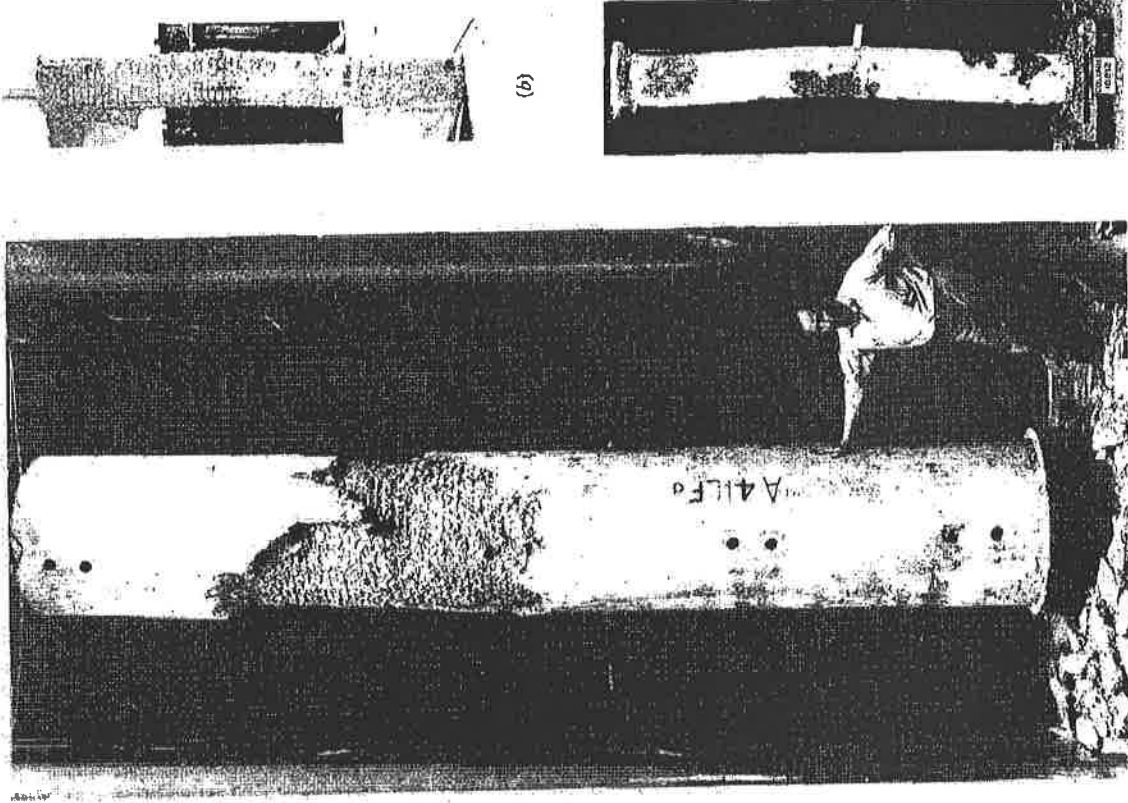


Fig. 2.4. Spiral column tests under concentric loads. (From Univ. of Ill. tests, Ref. 1, 4, and 5.) (a) Failure of 32-in. diameter column; $h/l = 6.6$. (b) Failure of 12-in. diameter column; $h/l = 7.3$. Shell has completely spalled off. (The special ends were cast to permit comparative tests with eccentric loads.) (c) Failure of column with thin cover or shell; $h/l = 10.0$.

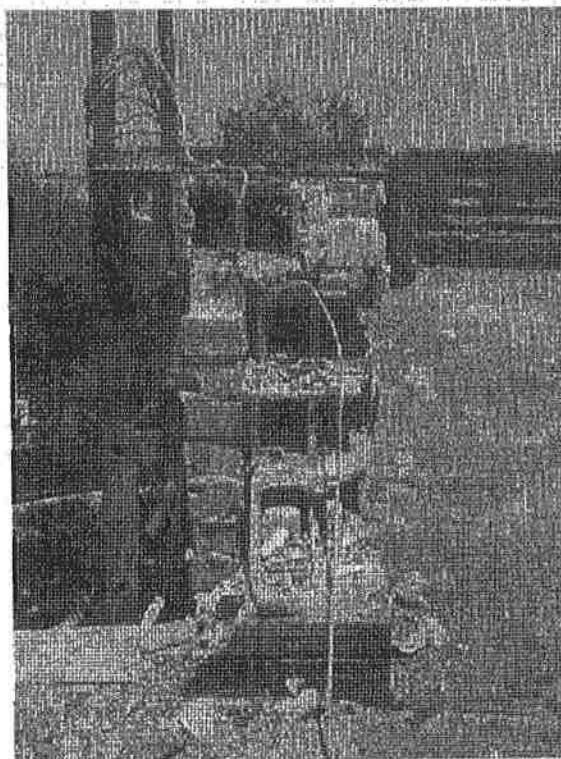


Photo 1

LAM PRODUCTION
LAM DOC. PRODUCTION
0924-2510 DOZ
0924-2510 DOZ
0924-2510 DOZ
0924-2510 DOZ
Deteriorated Col
#Wall

MODIFIED 9/16/2010, 6:22 PM
DATE TAKEN: UNKNOWN

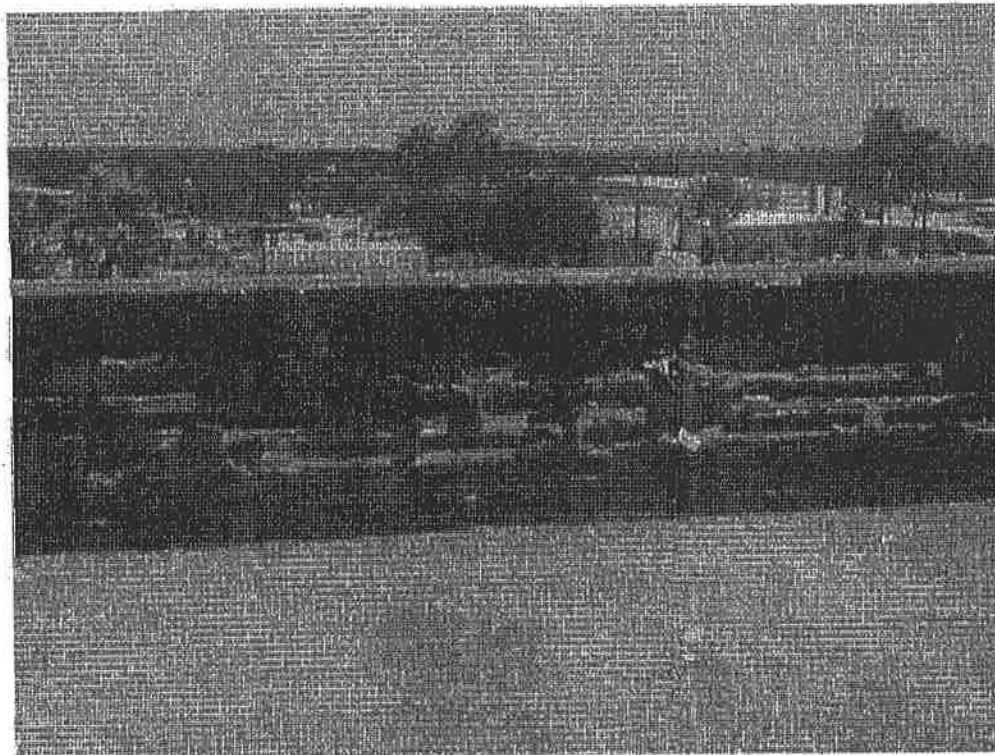


Photo 2

EXHIBIT 16

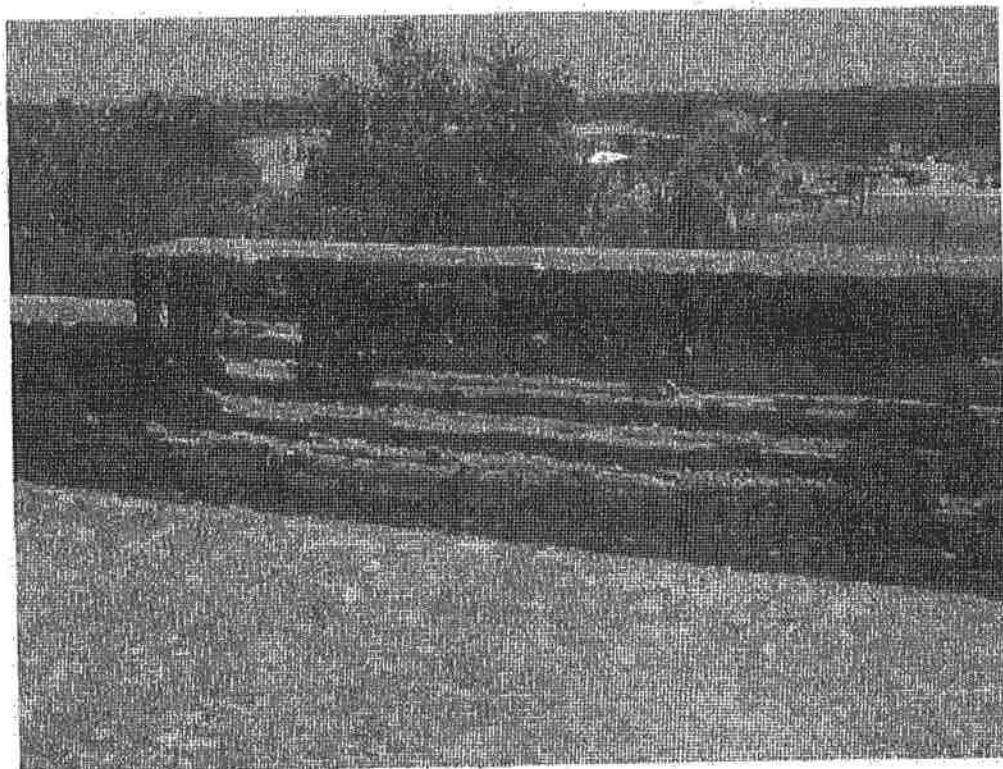


Photo 3

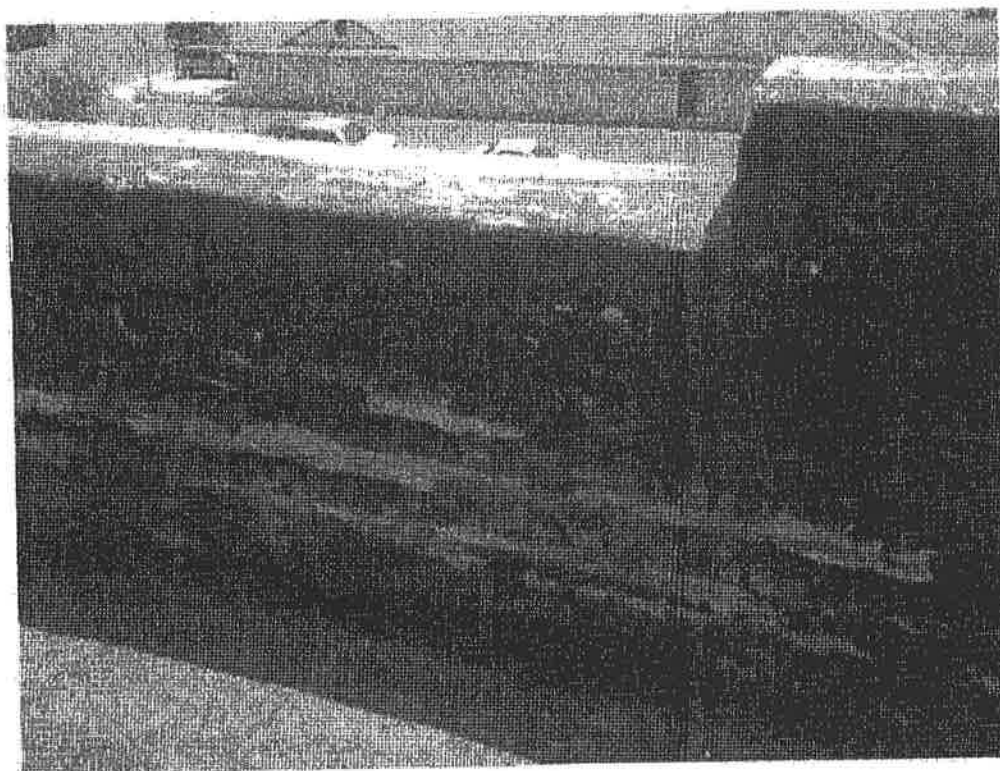


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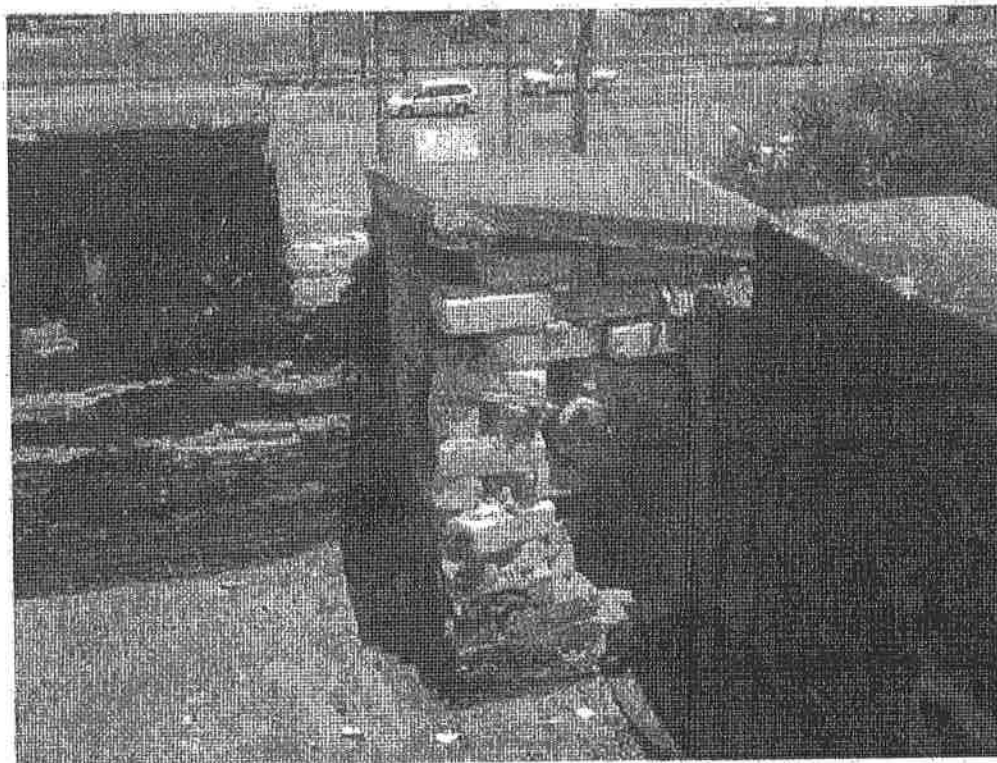


Photo 5



Photo 6



Photo 7

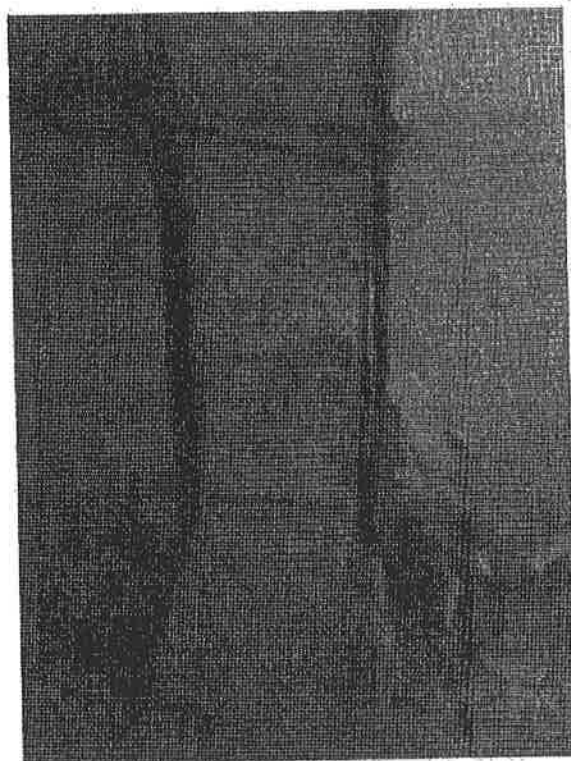


Photo 8



Photo 9



Photo 10

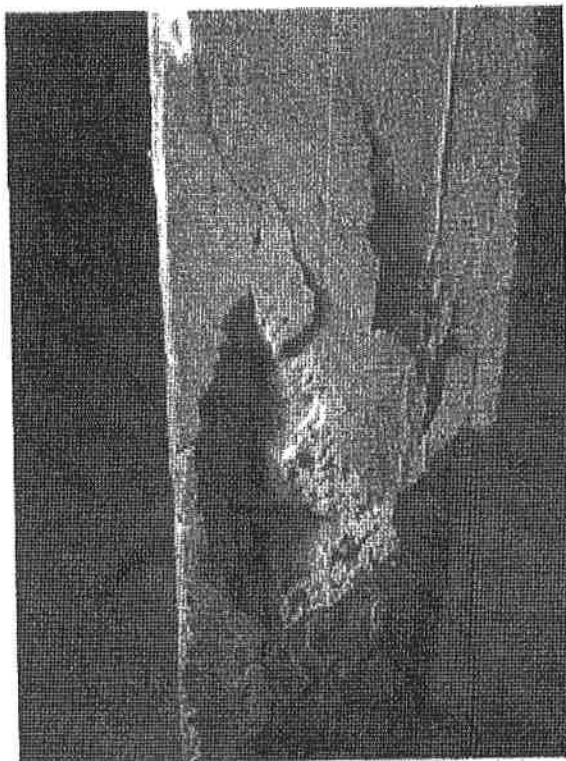


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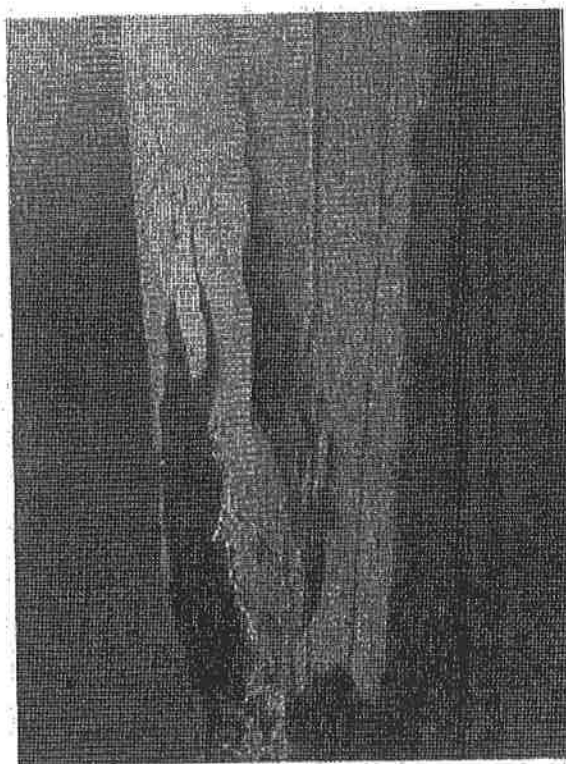


Photo 12



Photo 13

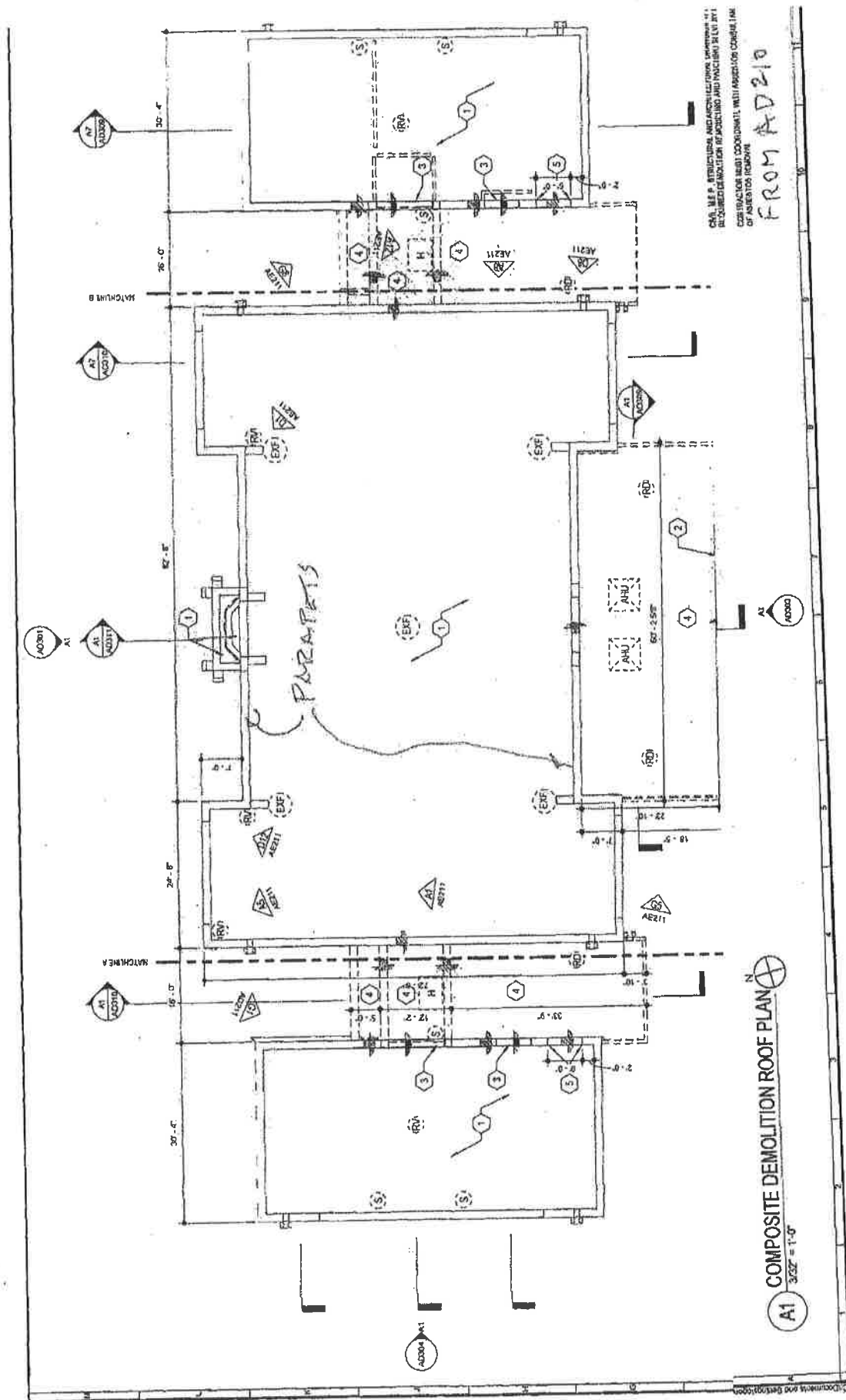


EXHIBIT 17

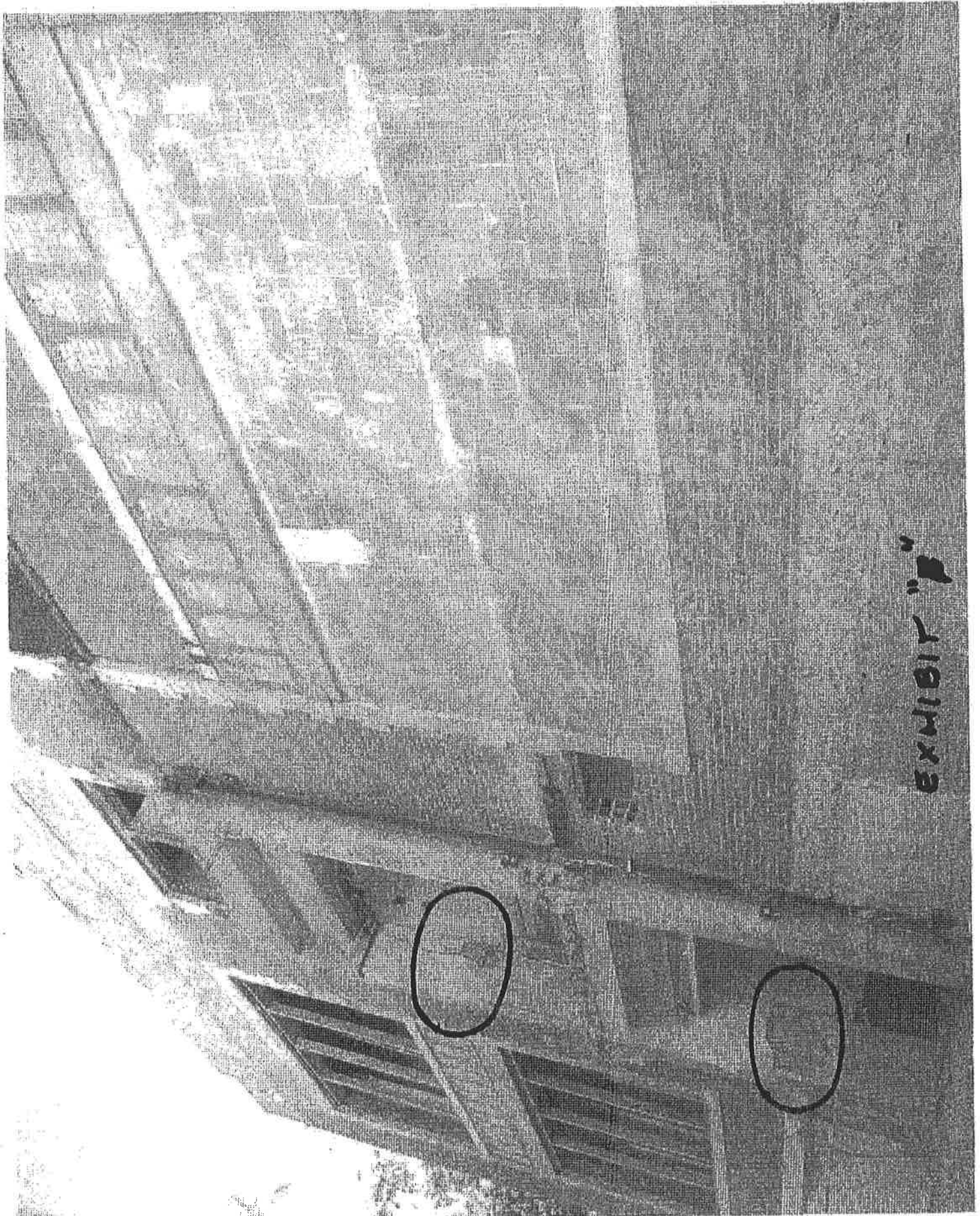


EXHIBIT "B"

EXHIBIT 18



Photo 1

PHOTOS TAKEN
2/18/2009
ERO PHOTOS
FOUND IN LAM
FILE

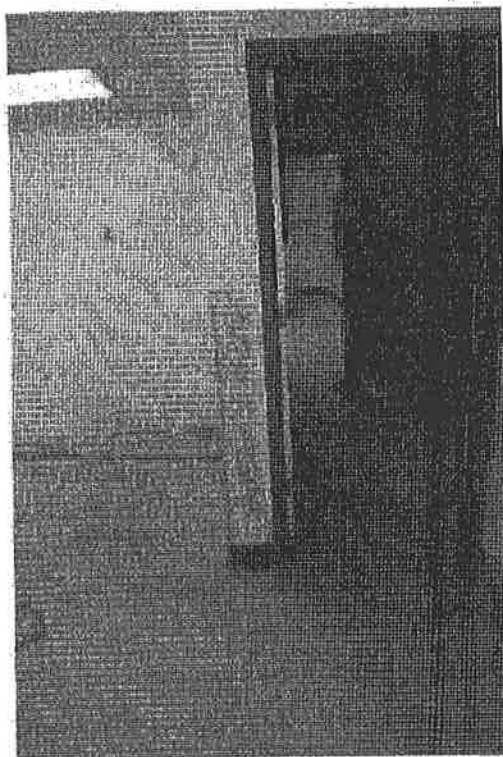


Photo 2

EXHIBIT 19

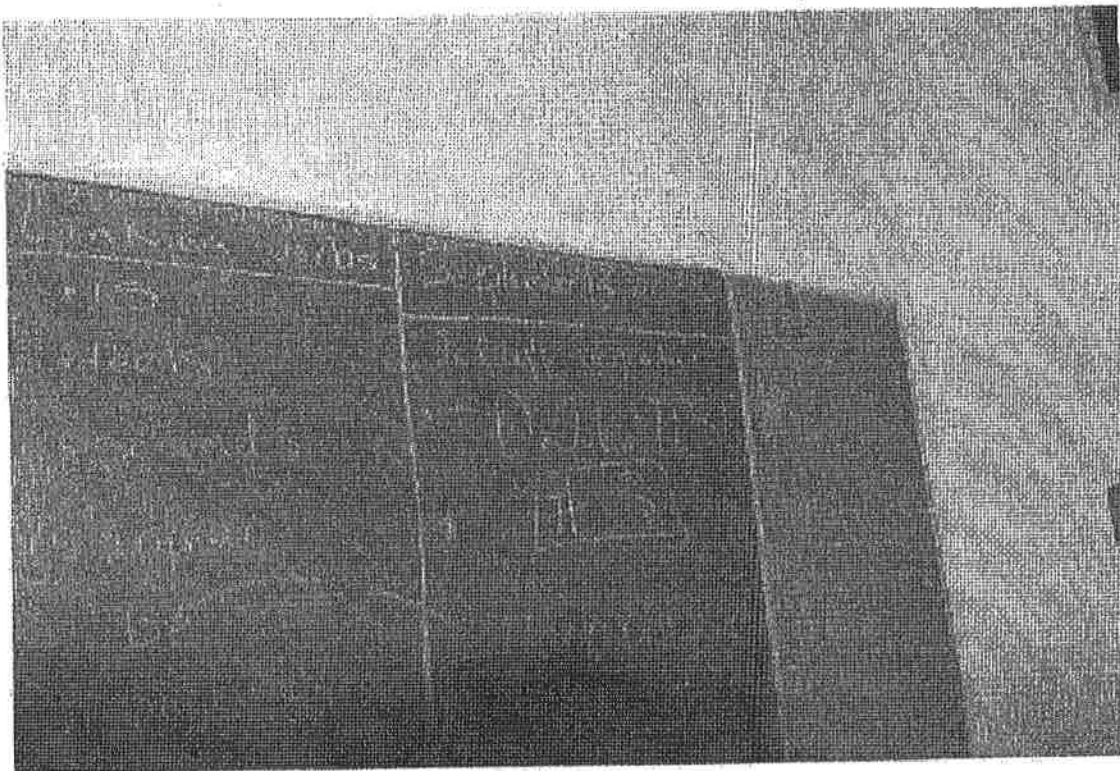


Photo 3

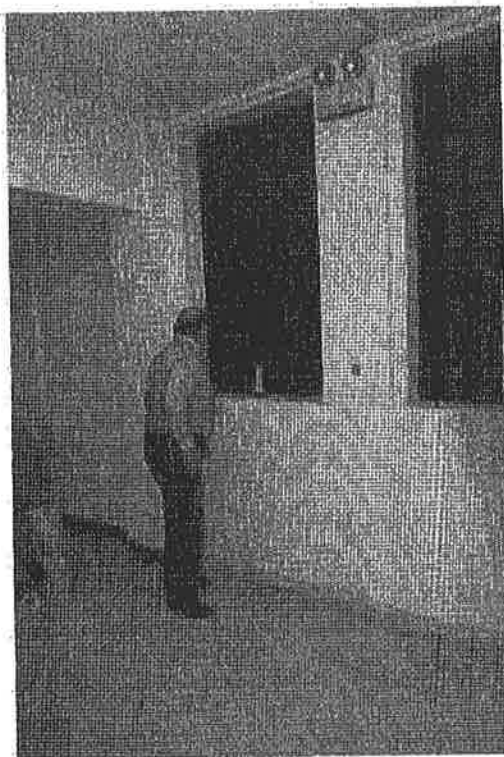


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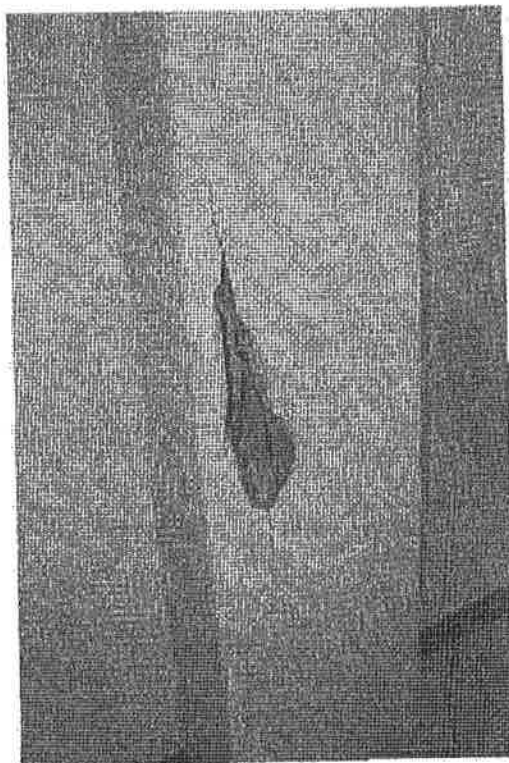


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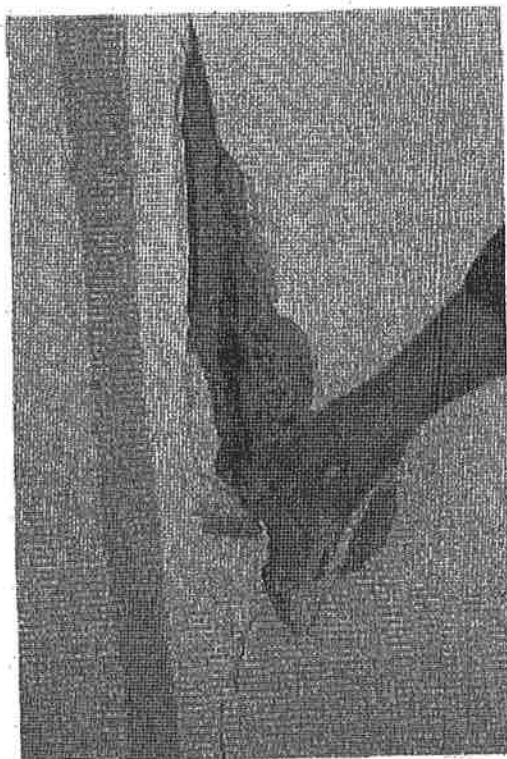


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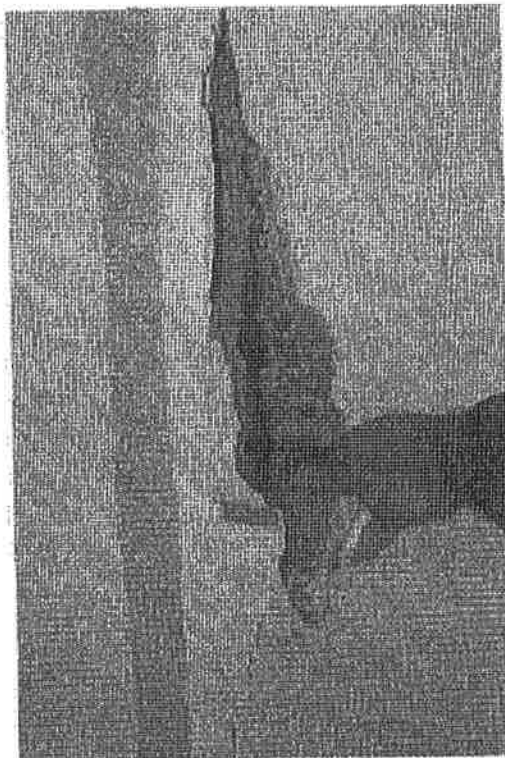


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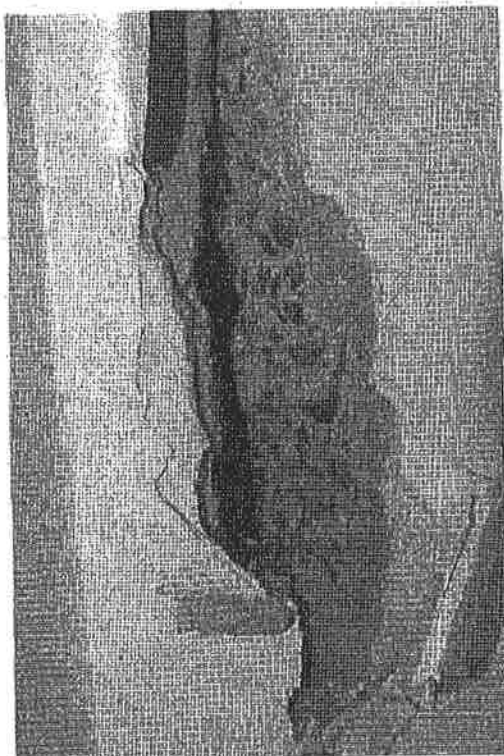


Photo 8

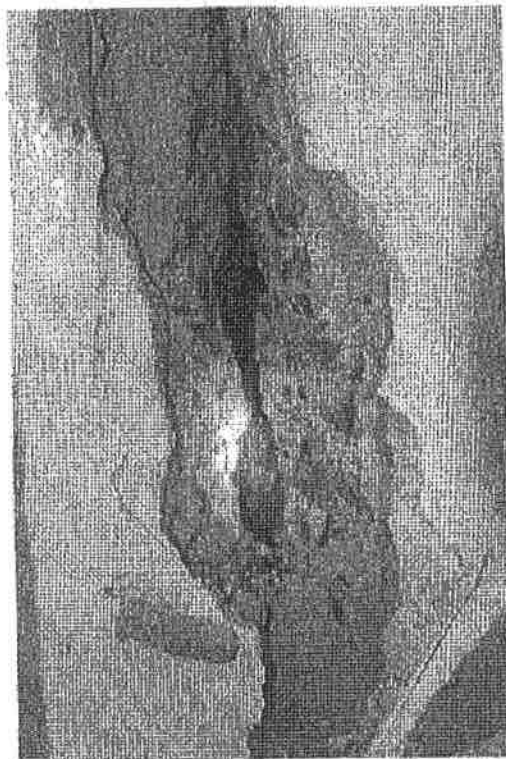


Photo 9

PSJADamagesMatrix082815

TABLE 1
DAMAGES MATRIX

A. Costs directly related to building collapse

Date	Reference	Description	Cost
10/27/2010	CP 015	Fix, repair and strengthening of columns at basement	50,886.00
12/22/2010	CP 020	Fix, repair & strengthening of 12 columns at basement	69,787.00
4/22/2011	CP 025	Add additional strength via FRP to the original 12 concrete previously scheduled and 33 additional columns found to be in bad conditions by the structural engineer. Adjust \$186,523 cost to \$158,301 per CCD7 5/3/11 CP 025	158,310.00
1/17/11	CO 001	Remove and build east and west side walls	522,726.00
	CP026	Repair stair nosings in east and west side and front lobby.	26,115.00
	CP023	Fix parapet walls	57,000.00
	CP 031-R	CP 031-R furrouts, parapets, steps and ramp, parapet due to change in roof slope	15,066.00
11/7/2011	CP 031	Various reconstructive construction items	56,770.00
		Sub-total	956,660.00

B. Costs directly related to basement slab moisture

Date	Reference	Description	Cost
8/2/12	CP 004	On August 7, 2013, Raba Kistner tested concrete slab moisture & readings were 2.6 to 3.91 lbs of water over 1000 sf in 24 hrs. 8/ 2/ 2012 Slab moisture remediation and topping system and removal of cork.	15,650.00
		Sub - total	15,650.00
		GRAND TOTAL	972,310.00

EXHIBIT 20

Irene B. Thompson

QUALIFICATIONS OF THE APPRAISER IRENE B. THOMPSON

State Licensing and Certification

Licensed by the State of Texas as a General Real Estate Appraiser: License Number TX-1336175-G

Education

Graduate, Weslaco High School, May, 1992

Three years education toward Bachelor of Arts in History and Philosophy, Brown University, September, 1992 through May, 1995

Continuing Education in Real Estate and Appraising at The Appraisal Institute, Lincoln Graduate Center, The Columbia Institute, Trinity University, Lon Morris College, and Geo Leonard School of Real Estate.

Professional Experience

Irene Thompson has been associated with Aguirre & Patterson, Inc. from September, 1998, to the present. As an independent appraiser, Mrs. Thompson has gained valuable experience appraising various types of properties throughout the Rio Grande Valley. The following is a list of the types of properties Mrs. Thompson has appraised: single-family residences, multi-family apartments, residential condominiums, residential lots, unimproved land tracts, subdivisions, right of ways, easements, dine-in and fast food restaurants, condominium shell facilities, single-tenant and multi-tenant retail centers, professional business centers, commercial buildings, convenience stores, professional offices, medical clinics, assisted living centers, rehabilitation hospitals, banquet halls, community centers, churches, public schools, charter schools, adult and child day care centers, office/warehouses, distribution warehouses, manufacturing warehouses, condominium warehouses, cold storage facilities, cement plants, farms, ranches, motels, hotels, mobile home and RV parks, unimproved commercial lots, self-service and automatic car washes, government facilities subject to GSA leases, golf courses, auto service/quick lube auto shops, and leasehold estates.

Irene B. Thompson
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McAllen, TX 78501
Phone: (956) 686-4532
Fax: (956) 686-6011
E-mail: irene@aguirreandpatterson.com

Appraisal Report of

An Existing Educational Building
(aka Textbook Building)
714 E. US Business Highway 83
Pharr, Texas 78577

Prepared For

Mr. Rene Campos
PHARR-SAN JUAN-ALAMO ISD
601 East Kelly Avenue
Pharr, Texas 78577

Date of Report

October 13, 2014

Aguirre & Patterson, Inc.

Real Estate Appraisal & Consulting Services